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SCIENCE FICTION AGE



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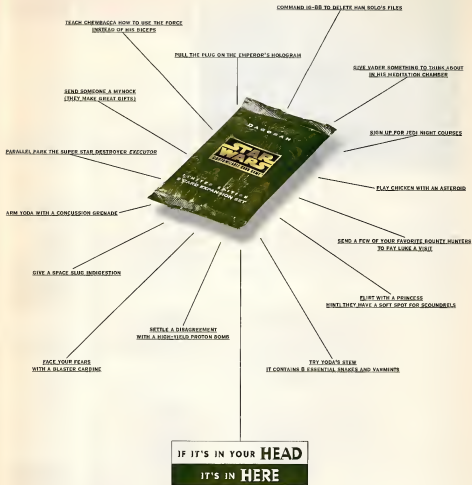
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COVER: A massive generation starship continues on its endless voyage, courtesy of artist John Berkey
ABOVE: A scene from the big screen adaptation of Robert A. Heinlein's classic novel *Starship Troopers*.

SCIENCE FICTION AGE

F I C T I O N

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Bull fighting was so old fashioned. The only worthy challenge for Frank Lazaro was a herd of Triceratops.

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By Geoffrey A. Landis

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60 YOUR EYES, MY DARLING, BLACK AND WHITE AND BLUE

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66 THE SUNHOUSE TRAP

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The far future will be so different from today as to be almost unrecognizable. But in many fundamental ways, nothing will have changed at all.

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Thank you for choosing your favorite fiction of 1996.

WE BOTH LIKE TIME TRAVELLING through the pages of magazines, you and I. That's why we meet in these pages every two months. (I might even be coming into your home more frequently than that if you also read *Sci-Fi Entertainment*, the other Sovereign Media title that I edit, which visits readers on its own nine-times-per-year schedule.) What I've never told you before is that I time travel in more than one direction. Not only do I voyage into the far-flung future in these pages, but when I am functioning as a reader, and not as an editor, I also use magazines to travel into the almost unimaginable past.

While I like to haunt the newsstands searching for news of the next big thing as much as anyone, I also enjoy dipping into yesterday's news, courtesy of magazines that were published in the days before even my grandparents were born.

For example, today's science fact and science fiction both become even more astounding when one considers the new scientific advances that were announced in the pages of the June 1899 issue of *The Strand Magazine*, which proclaimed in an article titled "The Newest Flying Machine" that "we are near the practical solution of the great problem of a man being able to fly."

On an athletic note, Elbert Hubbard, writing in the March 1903 issue of *The Cosmopolitan*, bemoaned the fact that "in a season of three months past, twenty-one men have been killed playing football," and demonstrates for today's Superbowl-crazed populace just how much the public perception of the most popular sport has changed in the ensuing nine decades by going on to state that "football and hazing spring from the same savage soil. Both are found only in educational institutions. ... The practical world has no use for football. The game will have to go, and its passing will not be regretted..."

But the most useful time machine for me as an editor came about in the pages of the premier issue of *The National Magazine*, which debuted in July 1852. Abel Stevens, hopeful editor of a new magazine in a time when even then there already seemed to be too many of them, sent me this useful message from 145 years in the past. Contemplating the works he was about to present before the public, he wrote on behalf of his staff, "in adding another publication to what they acknowledge to be the already superabundant literature of the times, it will be their endeavor to mitigate the

evils of this excess by winnowing the wheat from the chaff — by rendering their work a repository of only the selectest articles."

Things haven't changed at all in the ensuing decades. Editors still must separate the wheat from the chaff, and I have personally read tens of thousands of manuscripts to find for you the very best. Once a year, however, it's your turn to choose — and not just the best, but the best of the best. Your postcards have swamped our offices since we asked you to choose your favorite novellas, novelettes and short stories of 1996, and here is what you told us:

Your choice for favorite novella was:

"Immersion" by Gregory Benford: This March tale of a future economist being hunted by terrorists while hiding within the mind of a chimpanzee was a riveting thriller. We're pleased to learn that it will be reprinted in *The Year's Best Science Fiction*.

For novelette, you chose:

"The Compassionate Smothering-Death of the Universe" by Kandise Elliot: Readers in May were treated to Interrogator Regal Kel's ethical dilemma in this chilling portrait of betrayal in a vast Galactic Conflict.

Since short stories make up the bulk of our fiction, we present the top three vote-getters:

"The Lady Vanishes" by Charles Sheffield: This November story of covert science that brought *The Invisible Man* to modern times (and made her a woman) was far and away your favorite short story of the year.

"The Death of a Star" by Jack Williamson: Like fine wine, this Grandmaster gets better with age. His first tale was published in 1928. Seven decades later, his November story could still rank as your second favorite of the year.

"A Chicago Dinner Party, Sometime After" by W. Gregory Stewart: This proved to be the most controversial choice. While some readers complained about this November picture of the future (see Letters column for one example), enough of you adored it to make it the year's third most popular story.

As we promised, three postcards have been pulled at random from the overflowing mound, and the following readers will each be sent a box of assorted recent books and prepublication galley. Thank you, Carl Cipra, Alexander Flipse, and Cheryl Olson for your help.

Now we can say that 1996 is officially over. I hope you're enjoying 1997. Please pay attention, so you'll be ready for next year's voting. It's important! You never know — someone 100 years in the future may need your opinion to do a little time travelling of their own.

Scott Edelman

SCIENCE FICTION AGE

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Mr. Edelman:

I have been reading Science Fiction for more than fifty years, and I have read everything from Anderson (can't think of a lower "A" just offhand) to Zelazny (can't think of a higher "Z") — hard core, soft core, social, utopic, dystopic, etc. — and some that are just called "Fiction" (Tom Clancy, Robin Cook, Michael Crichton, Bill Buchanan) because they did not wish to get "locked into" the SF genre (probably wise). I have enjoyed, literally, thousands of books, short stories, novelettes, etc., but for pure relaxation, I always go to Sci-Fi. My mind can soar to those places that only exist in my (or someone's) imagination — among the stars.

Like you, I like the whole spectrum, be it Science Fiction, SF, Sci-Fi, Spec Fic or skiffy and easily find common ground with any of the "purists."

I've very rarely used the term Spec Fic and never skiffy, but I do like SF the best. Why? Because it can also mean Science Fantasy, but I'm not prejudiced about any of the other terms. I cannot understand why anyone should be the least bit upset about terms that mean virtually the same thing.

As for the fiction:

"End City" by Phyllis Gottlieb: Now here is an intriguing thought. If we were blessed (cursed?) with psi abilities, such as these, I feel confident that our rates of murder, suicide, divorce and incidence of war would go sky high! I really liked the part when Sheleen ran into the creche. She was able to calm the babies and was in return calmed by them. (And I was calmed from the ongoing excitement!) Yes, some of us men have a mooring instinct, too. Kudos to Ms. Gottlieb; well thought out and written — thank you.

"What Would You Like to Know?" by Charles Sheffield: If you knew you'd get an answer, would you dare to ask the question? Even though it is scary, I probably would. For as long as I can remember, I've always wanted to know everything about everything. (Impossible!) I have spent much of my life pursuing this "will-o-the-wisp" and enjoyed every moment of it. Thanks, Mr. Sheffield, for raising the question.

The others were good, too — but these grabbed me! Thank you, SFA, for bringing them to me.

Peter Blackwell

Dear Editor:

I'm tempted to write a book to agree with, but also disagree with, reader Sandra H. Necchi. I'll make one complex comment: the weakness of the welfare system has always been unwillingness to face the most

obvious — it costs to pay people as they begin to work or begin an education to better themselves, but it will be a worthwhile act that will pay off. Problem: I think many politicians and the rich and the powerful are afraid of too much upward mobility. They'd rather have illegal aliens to add to the bulk of the poor. And for God's sakes don't do anything to help a lot of poor people increase the size of the hated middle class.

Science fiction and the space program are needed to inspire us to the highest. We shouldn't stop the space program until all problems on Earth are solved, i.e., stop crying "give me the money." Scientific advances always help people.

The initial reason I wanted to write this letter was because of the excellent "Moon Six" by Stephen Baxter. I hope it wins a prize. It's a haunting tale exceedingly well done.

Roscoe Wright

Dear Mr. Edelman:

I just finished reading your Editorial in the March 1997 issue of *Science Fiction Age*. It is so refreshing to find that there are others like me out there. I, too, love to read, watch, see and hear SF, Sci-Fi, Science Fiction, et al. In fact, you might say I go one step further in reading academic SF as well — stuff on the history, sociology and literary criticism/analysis of science fiction and its many faces.

As geeky as it may sound, SF permeates every aspect of my life, whether I like it or not. It is the dominant pigment of the glasses through which I see life. And I like that. Currently, I live in an SF black hole. Among my current group of friends, I am the only person who likes SF. I subscribe to both *Science Fiction Age* and *Sci-Fi Entertainment*, and love them both. They help me connect to the fan base "out there," and together give me a more well-rounded view than either would alone.

Thanks for "coming out of the closet." Maybe it will encourage others who have not been so brave to come into the "light." I agree — science fiction, sci-fi and SF shouldn't fight. To quote an overquoted phrase, "Can't we all just get along?"

Of course, this is coming from a person who doesn't understand the evolution vs. creation or the nature vs. nurture debates. As I see it, what's there to debate? They both work, are not mutually exclusive, and only enhance each other. The same goes for the "universes" of SF. Although I understand having a preference for one or more over another, this does not mean one is necessarily "better."

Carma Spence

Dear Editor:

Although I have been reading science fiction since Isaac Asimov was a young man, I have just seen my first copy (November 1996). I have not yet read much of it, but my initial impression is more than favorable. Right off, however, two things caught my immediate attention:

First, a letter from Tracy L. Zellich commenting on the paucity of contributions from female authors. The letter is symptomatic of an alarming trend in today's society towards a false democracy in which it is considered more important to have all races, sexes, etc., proportionally represented everywhere than to find the best work possible, regardless of who does it. The race, sex, age, planet of origin, sexual orientation, and species of your writers are utterly irrelevant. The only thing that matters is to get the finest writers you can find.

Secondly, I'm sure I won't be the only one to comment on a typo in the first paragraph on Page 10 that drastically changes the meaning of the sentence in which it occurs from what was presumably intended. "Territorial avian" a la Hitler's quest for *Lebensraum*... Surely the word should be *Lebensraum* (capitalized as are all German nouns), which means "living space." *Lebensraum* means "loving space," which was most emphatically not what Hitler wanted!

Donald M. Graham

Dear Mr. Edelman:

I have been reading science fiction for thirty-seven years, and "A Chicago Dinner Party, Sometime After" [by W. Gregory Stewart, November 1996] was the most ridiculous thing I have ever read. I know everybody is a critic and some would say, and have said, that I am off my rocker, but I think Heinlein would turn over in his grave if he read this story. (If you can call it a story.) I know people have different tastes, and that is usually a good thing. However, this story is just too weird.

Donald O. Townsend

As Abraham Lincoln said, it is impossible to please all of the people all of the time. I've discovered that this maxim is as true for editors as it is for presidents. Take a look at this issue's Editorial for the results of our annual Reader's Poll to discover what I mean.

Readers—please let us know how we're doing at: Letters to the Editor, Science Fiction Age, 441 Cortland Dr., Herndon, VA 20170, or e-mail to S.Edelman1@Genie.Gis.Com, or use CompuServe address: 102746.2004.



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BOOKS

By Paul di Filippo, D. Douglas Fratz and Rachel Russell

Asimov's greatest creation lives on in the pages of Benford's *Foundation's Fear*.



ABOVE: Charles Sheffield tried to recapture the thrill of space with *The Billion Dollar Boy*, as did artist Vincent Di Fate with his cosmic cover.

FOR THOSE OF US WITH LESS THAN AN *ENCYCLOPEDIA GALACTICA*'s worth of memory, perhaps a quick recapitulation of the status of Isaac Asimov's *Foundation* series at the time of his death might be in order. Following that, we can truly appreciate the latest installment in the series, *Foundation's Fear* (HarperPrism, hardcover, \$23.00, 400 pages), penned by the first of three estate-selected heirs to Asimov's universe, Gregory Benford. Beginning in 1982, Asimov set out to unify the majority of his fiction into one coherent future history.

Anyone familiar with Asimov's classic robot novels—*The Caves of Steel* (1954) and *The Naked Sun* (1957)—probably recalls the state of galactic affairs at that future point. Earth is a human hive, fifty Spacer Worlds dominate interstellar affairs, and robots are generally perfected, culminating in the unique humanoid creation, R. Daneel Olivaw. It's a far haul from here to the 25 million human-occupied worlds of the Empire, robotless and forgetful of their Earth origins. But

somehow Asimov managed to chart the course.

In *The Robots of Dawn* (1983), Life Baley travels once more to the world of Aurora, reuniting with his old partner, Olivaw, to solve a single murder, and simultaneously to break the current stagnation that thwarts human expansion into the galaxy. By novel's end, the road is open for Earth-based humanity to surpass the superannuated Spacers and explode into the galaxy. With their short lives and anti-robot sentiments, these Earthers are plainly the ancestors of the Empire, the long-lived, robot-loving Spacers now a dead branch on the evolutionary tree.

Robots and Empire (1985) opens 200 years later, with that expansion a reality. The fabled radiation poisoning of Earth is explained as a last-gasp Spacer attack. Olivaw picks up the power of mentally manipulating humans from a freak robot named Giskard, and the Zeroth Law of Robotics is formulated, placing the good of humanity as a whole above that of any individual human.

Next in the sequence come novels from Asimov's early fulltime writing career: *The Caves of Steel* (1952); *The Stars, Like Dust* (1951); and *Pebble in the Sky* (1950). Two new bridging works are now necessary to get to the core series of *Foundation* (1951), *Foundation and Empire* (1952) and *Second Foundation* (1953).

In *Prelude to Foundation* (1988), the Empire is on the cusp of its long slow disintegration, yet seemingly rich and immortal. Hari Seldon is a young man come to Trantor to deliver a paper at a convention. Identified by the disguised Olivaw—now a 20,000-year-old positronic Machiavelli—as the unique human who can perfect the invaluable psychohistory (or the "laws of humanities" which Olivaw dimly foresaw millennia ago), Seldon is thrust into danger and into situations that will set him on his destined course. He acquires as loving protector a wife who is also a humanoid robot, and an adopted son.

Forward the Foundation (1993) details the rest of Seldon's long life. Laboring as First Minister to Emperor Cleon and then after a fall from grace as a simple professor, Seldon and his comrades work through frustration and despair to perfect psychohistory. When Seldon's own granddaughter proves to have surprising mental powers, he conceives of the parallel, hidden Second Foundation.

By the time of his death, the Empire is plainly failing, and his dual Foundations are established.

The farthest two extensions of the future history are *Foundation's Edge* (1982) and *Foundation and Earth* (1983). Functioning almost as a single book, they recount the exploits of one Golan Trevize, an impetuous young Foundation Councillor who suspects the continued existence of the ostensibly destroyed Second Foundation. What he discovers on a race across the stars from assembled pursuers is something stranger: the existence of a





Batteries never included.

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world-mind called Gaia, which has its own plans for the galaxy.

Gregory Benford — noted for his own enormous cycle of Galactic history — has chosen to shoehorn his book into the seemingly minuscule space between *Prelude* and *Foundation*: a short interval before Seldon became First Minister. The need for this is plain, if not at first obvious: as Benford tells us in his afterword, “elements make their first appearance here [which will be amplified in] Greg Bear’s *Foundation and Chaos* [and David Brin’s *Third Foundation*.” In other words, some heavy-duty retrofitting is needed in order to nurture the series beyond Asimov’s limits.

On the issue of fidelity, *Foundation’s Fear* rates high. Benford has moderated his dense, occasionally Faulknerian prose into a slimmer-down style very reminiscent of Asimov’s own. Glints of Benford’s cosmic perspective and wryness still shine through, but in matters of dialogue and description, Ben-

Benford’s actual plot strikes me as neatly episodic in the manner of the original *Foundation* books. *Fear* reads almost like three or four linked novellas, even with its well-planned, suitably climactic story arc. We do get to see a few more new worlds out of those multi-million, and life-or-death crises intrude thereon. But basically, Benford’s book, despite a disclaimer, shares with Asimov’s an emphasis on “thoughts and conversation, [not] physical suspense.”

And just as in the Good Doctor’s work, we relish every cerebral twist and turn.

Paul Di Filippo

The Billion Dollar Boy, by Charles Sheffield. Tor Books, hardcover, 256 pages, \$22.95.

The juvenile science fiction novels of Robert Heinlein, published in the late 1940s and 1950s, introduced a whole generation of bright youngsters to SF literature, and helped

year-old rich kid named Shelby Crawford Jerome Prescott Cheever V who lives with his brainless socialite mother and appears to spend most of his time making the servants miserable. He seldom sees his corporate-mogul father, and appears to have no friends, intellectual pursuits, or redeeming social qualities. On a whim, after watching a few seconds of a puerile space comedy on TV, he badgers his mother into taking him on a luxury space cruise.

Bored, Shelby wants to visit the space mining operations in the outer system using the system of nodes that allow instantaneous matter transfer. When the spaceliner’s captain is too busy to go immediately, he gets drunk, dons a space suit, and goes into the node by himself, spurning the attempts of the node’s robot assistants to provide him with the hand-held control he obviously needs to pick his destination.

Thus Shelby ends up twenty-two light years from Earth in a remote region of space where a small society of space miners are collecting rare stable transuranic elements in a strange dust cloud of unexplainable origins. He is miraculously rescued by a highly-intelligent mining robot, and taken in by a family that spends most of each year mining the cloud before returning to the asteroid belt. They do not believe his story of being the son of one of the Earth’s richest men, and cannot afford to return early on the chance that he is telling the truth. Shelby must therefore stay with them for several months before he can return home.

Our bored rich brat adapts quickly, however, and becomes a valuable and productive member of the mining team. He is befriended by the family’s hard-working 15-year-old daughter, Grace, along with her 12-year-old brother, taught the meaning of hard work and discipline by their mother, the ship’s captain, and respectfully tolerated by their uncle and two other men working for the family. Most of the book chronicles Shelby’s emotional and intellectual coming-of-age with Grace and the others.

These sections of *The Billion Dollar Boy* marvelously recreate the strengths of Heinlein’s best juvenile novels. The mining family that adopts him is a typical Heinlein family, as is the larger society of miners with which they work, with individual competence and a hard-work ethic predominant themes. Shelby’s and Grace’s adventures are compelling, and the dust cloud they are examining a fascinatingly strange and beautiful hard-SF creation, replete with dangerous “reefs” and what in the end appears to be a strange alien life form.

When the spiral arms spread through the galactic arms, spilling through the universes, wrapping itself around the hub in a mere ten thousand years. In that time the spiral arms themselves had not resolved a perceptible angle in their own gravitational field; that would take a half-a-billion years.”

— *Foundation’s Fear*

ford aligns neatly with Asimov. As for matters of factual precedent, Benford has the canonical history down pat. No brazen contradictions are engendered. Perhaps the biggest modification is in the arena of FTL travel. Benford has chosen to depict a more plausible and limited wormhole network linking the worlds of the Empire rather than the magical hyperdrive.

Readers will be most interested in the new material conjured up by Benford. First off is greater cybernetic realism. Trantor now possesses the “Mesh,” its own super-Internet. Into the Mesh are seeded two simulated personalities derived from Old Earth artifacts: a virtual Voltaire and a Jerry-rigged Joan of Arc. These two artificial personalities carry much of the plot, exploring with Egan-level subtlety issues of being and nonbeing. And what they discover hidden in the Mesh serves to explain the famous all-human nature of the galaxy.

Additionally, thanks to the recent invention of chaos theory, Benford is able to make more plausible the whole concept of psychohistory and how it might be developed. We get a real sense of the intellectual chase — both physical and mental — that Seldon is engaged in. And with Benford’s own daily experience in the realm of academe, there is a further heightening of Seldon’s university experience, including plenty of satirical jabs.

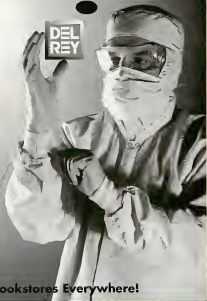
create a group of dedicated readers who still form much of the core audience for modern SF. The folks at Tor Books appear to have decided that a new series of young adult novels in the same tradition is now needed to bring a new generation to the genre, and have created their Jupiter line of novels.

Charles Sheffield’s *The Billion Dollar Boy* is the second novel in the Jupiter series, the first of which was last year’s *Higher Education*, which Sheffield co-authored with Jerry Pournelle. Both novels, like the Heinlein books on which they are modeled, are space adventure science fiction with clear messages glorifying the competent individual.

Sheffield’s new novel begins on a 22nd-Century Earth that is overpopulated and mostly poor, with only a small number of super-rich families controlling most of the wealth and power. The billion-dollar boy of the title is a spoiled and totally obnoxious fifteen-



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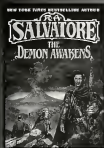


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Shelby's maturation and adventures in the dust cloud are excellent, sense-of-wonder-filled juvenile SF in the Heinlein tradition. But is this novel good enough to entice today's kids away from sci-fi movies and return them to written SF?

Unfortunately, probably not.

One of the essential things needed for juvenile fiction to be highly popular is a sympathetic juvenile protagonist with whom the reader can identify. In addition, any didacticism in juvenile novels must be subtle. And finally — and this may be the salutary distinction between juvenile and adult fiction (other than lack of sex) — the juvenile characters should in numerous and subtle ways be more intelligent and perceptive than the adult characters.

While Sheffield incorporates these qualities well into the middle sections of the novel, they are not achieved in the opening chapters, or to a lesser extent in the denouement. Shelby does not begin the novel as a sympathetic character. He, as well as his mother, are too obviously strawmen created simply to illustrate their flaws. This makes Shelby's rapid transformation into a sympathetic character after he meets Grace's family unconvincing. Shelby's father, when he shows up at the end, also demonstrates caring and wisdom that is inconsistent with his lack of attention to his son prior to his space adventure.

For *The Billion Dollar Boy* to serve its intended purpose, and reach the young readership it deserves, the first two and final chapters would need to be rewritten to make young Shelby less reprehensible and more of a tragically ignored rich kid. As it is, I fear that too many young readers will stop after two chapters and miss the fine coming-of-age science fiction adventure story that follows.

D. Douglas Fratz

In Death Ground by David Weber and Steve White. Baen Books, paperback, 329 pages, \$6.99.

The exciting discoveries of actual planets around other stars that the Hubble has allowed, combined with the fossil of what may have been a primitive Martian life form found in an asteroid, may push us back out to space and to those dreams of faster-than-light travel, colonizing new worlds and meeting actual sentient aliens. But what if we meet powerful aliens? What if they are bug-eyed monsters? What if they consider us lunch?

Mind you, I'm still excited about space exploration and don't want us to chicken out. But David Weber and Steve White have written quite a scary, classic science fiction novel that could almost be a warning to stay home and not wander about in space. Weber and White are an experienced team of writers. Their past credits include *Insurrection* (1990) and *Crusade* (1992).

In Death Ground starts with a routine survey mission making a first transition through a previously unexplored warp point. They

Continued on page 96

Poetry Contest \$48,000.00 in Prizes

The National Library of Poetry to award 250 total prizes to amateur poets in coming months

Owings Mills, Maryland — The National Library of Poetry has just announced that \$48,000.00 in prizes will be awarded over the next 12 months in the North American Open Amateur Poetry Contest. The contest is open to everyone and entry is free.

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The National Library of Poetry publishes the work of amateur poets in colorful hardbound anthologies like *The Coming of Dawn*, pictured above. Each volume features poets in a diverse mix of poets from all over the world.

Library of Poetry's forthcoming hardbound anthologies. Previous anthologies published by the organization have included *On the Threshold of a Dream*, *Days of Future's Past*, *Of Diamonds and Rust*, and *Moments More to Go*, among others.

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"We're always looking for new poetic talent," said Mr. Ely. "I hope you urge your readers to enter the contest. There is absolutely no obligation whatsoever, and they could be our next big winner."

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MOVIES

By Dan Perez

Summer's sci-fi blockbusters stand ready to invade your local theaters.



For hardcore SF fans, the upcoming Paul Verhoeven-directed adaptation of Robert A. Heinlein's classic novel of alien warfare *Starship Troopers* (above and below) is the most eagerly awaited adaptation of the year:

SPRING HAS ARRIVED, AND FOR MOVIEGOERS THAT means that the summer blockbuster movie season is just around the corner. Every summer the blockbuster stakes get higher and more stuff blows up real good. Unfortunately, the quality of big summer movies seems to be steadily declining, even as they rack up record box office receipts. Last summer's blowout *Independence Day* was fun, but it was nevertheless a Frankenstein's monster of a movie, cobbled together from elements from a half-dozen other films. It's noteworthy that the *Star Wars* Trilogy came out a few months back: It's the movie that spawned the blockbuster phenomenon, for better or worse.

Since spring is often a time of lean pickings as the studios

square off for summer, it's worthwhile to devote this issue's column to assorted news and previews of upcoming summer movies.

Genre television shows racked up Golden Globes from the Hollywood Foreign Press Association last January. Fox's *The X-Files* won Best TV Drama and its stars David Duchovny and Gillian Anderson both walked away with

Best Acting in a TV Drama awards. NBC's *Third Rock From The Sun* snared the Best TV Musical or Comedy award, and its star John Lithgow was honored as Best Comedy Actor (*Mad About You*'s Helen Hunt interrupted a *Third Rock* clean sweep by taking Best Comedy Actress). The Golden Globes are usually heralded as a strong indicator of Oscar winners, but alas, no genre movies won.



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ABOVE: Jurassic Park's nasty reptiles are back in Michael Crichton's *The Lost World*.
BELOW: Actress Uma Thurman moves from *Pulp Fiction* to science fiction in *Gattaca*.

Park. Steven Spielberg is at the helm again, and we can expect more CGI/animatronic dinosaurs from Oscar-winning effects experts Dennis Muren and Stan Winston. Jeff Goldblum returns to the role of quirky mathematician Ian Malcolm and Richard Attenborough reprises his role as park creator John Hammond. Julianne Moore (*Assassins*) costars. The scoop is that seven types of dinosaurs (including the diminutive "compy" — short for *compsognathus*) will appear, and there will be scenes of scientists cutting a dinosaur out of a herd with jeeps and a motorbike and, most intriguingly, multiple T-Rexes.

In June, watch for *The Fifth Element* from French director Luc Besson (*The Professional*), whose last science fiction movie was 1984's *Le Dernier Combat*. This big-budget film, which stars Bruce Willis, Gary Oldman, Ian Holm and Luke Perry, has been shrouded in intense secrecy, but a few tidbits have surfaced. Production design will be done by Jean-Claude Mezières, who wrote a 20-volume graphic novel in the late '60s that featured a "spatio-temporal agent" named Valerian. The story is said to take place in a futuristic New York City and the special effects budget alone is said to be a jaw-dropping \$100 million (James Cameron's *Digital Domain* is handling the effects).

The director who brought you the bat-butt and bat-nipples, Joel Schumacher, serves up Warner Bros.' *Batman and Robin* in June. The star-laden cast features George Clooney in his first turn in the bat-suit, along with Uma Thurman as Poison Ivy and Arnold Schwarzenegger as Mr. Freeze. Costars include John Glover; Vivica Fox; and Elle MacPherson, who plays another bat-crossed lover. During the making of *One Fine Day*, former Catwoman Michelle Pfeiffer reportedly advised costar George Clooney to

make sure the producers included a trapdoor in his bat-suit so he could go to the bathroom.

Columbia brings out *Men in Black* in June, as well. The trailer for this tongue-in-cheek story of two secret government agents who investigate and deal with extraterrestrials who come to Earth is already in theaters, and it looks great. Tommy Lee Jones and Will Smith (fresh from all that alien whup-ass in *Independence Day*) play the eponymous characters, Kay and Jay, who have big guns and bigger attitudes. Linda Fiorentino costars and Barry Sonnenfeld directs. ILM is handling CGI flying saucer and alien effects.

Also in June, Walt Disney Studios releases *Hercules*, its latest animated feature. The mythic movie will be directed by Ron Clements and John Musker and will feature the voice talents of Tate Donovan (as Hercules), James Woods, Danny DeVito, Susan Egan and Rip Torn. The story, a musical adaptation of the 12 tasks of Hercules, will feature one production number called "Zero to Hero." Legendary Disney villain creator Andreas Deja will be designing Hercules.

In July, Jodie Foster stars in *Contact*, based on the novel of extraterrestrial first contact by the late Carl Sagan. Flavor-of-the-month



Matthew McConaughey costars in this Warner Bros.' production, along with John Hurt, David Morse and Rob Lowe. Robert Zemeckis (*Back to the Future*, *Forrest Gump*) directs.

In August, Todd McFarlane's popular comic series *Spawn* is adapted for the screen by New Line. John Leguizamo (*The Pest*) plays the heffish Clown under a ton of makeup, and Michael Jai White plays the Clown's rebellious protegee, known as Spawn. Director Mark Dipp (who used to work with Industrial Light and Magic) does double-duty, creating computer effects for the powerful Spawn suit and a three-minute CGI vision of Hell itself.

Mortal Kombat: Annihilation is New Line's sequel to the videogame-martial arts movie *Mortal Kombat*, and features the heroes who saved the Earth last time battling the minions of an evil emperor named Shao Khan. Robin Shou, Bridgette Wilson, Talissa Sat and James Remar star. John Leonetti directs.

Gattaca stars Uma Thurman and Ethan Hawke in this futuristic thriller about genetic purity and predetermination and a supposedly inferior hero who bucks the system. The Columbia production was written and directed by Andrew Niccol.

Universal's *Kull the Conqueror* is a fantasy tale based on a character created by Robert E. Howard, who created Conan. Kevin Sorbo of TV's *Hercules: The Legendary Journeys* stars as the hunky barbarian. Costars include Tina Carrere, Litefoot and Harvey Fierstein. John Nicolla directs from Charles (*Dragonheart*) Pogue's screenplay. Raffaella De Laurentiis produced. The film was shot in Slovakia, utilizing many of the same locations as *Dragonheart*. Sorbo plays a barbarian who ascends to the throne after slaying an insane king. Complications ensue when scheming nobles resuscitate an ancient witch (Carrere) to dethrone Kull.

Finally in August, there's Paramount's *Event Horizon*, in which the world's first faster-than-light spaceship vanishes on its maiden voyage, only to reappear several years later, harboring a mysterious transdimensional life form. Paul Anderson directs. Stars include Laurence Fishburne (who plays the leader of the salvage team exploring the lost ship), Kathleen Quinlan and Richard T. Jones.

In September, New Line's *Dark City* will feature William Hurt, Kiefer Sutherland and Jennifer Connelly in a futuristic tale of amnesia, murder and mistaken identity. Alex Proyas directs.

Starship Troopers was originally scheduled for July, but has been moved back to late summer/early fall. It's based (loosely, it's reported) on the classic novel by Robert A. Heinlein. Paul Verhoeven (*Robocop*, *Total Recall*) directs from a script by *Robocop* writer Ed Neumeier. There's no powered armor, alas, but thanks to effects whiz Phil Tippet (*Jurassic Park*), there'll be nasty CGI bug aliens aplenty. Neil Patrick Harris, Van Dien, Dina Meyer, Michael Ironside and Clancy Brown star in this TriStar production. □



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Collectibles versal Studios, always frightening, yet always strangely sympathetic. Kitchen Sink Press has brought them all back in their *Universal Monsters of the Silver Screen* trading card series. All of our spooky old friends are included, such as *Frankenstein*, *The Invisible Man* and *The Creature from the Black Lagoon*, as well as lesser known creatures like *The Leech Woman* and *The Mole People*. This 90 card series features rare stills plucked from over 70 films produced by Universal between 1923 and 1960. Authors James Vance (*Kings in Disguise*) and Kate Worley (*Omaha the Cat Dancer*) provide a detailed background text for each movie still. Each pack contains eight foil-stamped photo cards plus a full-color sticker reproducing one of ten assorted movie lobby cards. These are available in finer comic and hobby shops everywhere.

12th Step Beyond

Everybody sometimes needs a little help to get through the night, even those of us who've boldly gone where no one has gone before. That's why IF Books, **Self-Help** a division of Interfaith Resources, has published *The Unauthorized Starfleet Daily Meditation Manual* (\$14.95). This compact manual for spiritual living bases its daily doses of insight on quotes from the characters who populate all four generations of *Star Trek*. Captain Picard's warning to

"Live now! Make 'now' the most precious time!" is accompanied by a few paragraphs on applying these precepts to one's daily life, and every day of the year has its own unique brand of wisdom, thanks to compiler and author Mark Stanley Haskett. To keep the Hollywood lawyers happy, the author is forced to remind us that this volume "was not prepared, approved, licensed or endorsed by any entity or person involved in creating or producing the *Star Trek* television series or films," but somewhere, we



know, Gene Roddenberry is smiling. This book perfectly embraces the philosophy behind *Trek*, and regardless of what the lawyers must say, he would have been pleased to own a copy.



Do Not Pass Dagobah...

The *Star Wars* trilogy, with an apparent monopoly on filmgoers' dollars for the first quarter of 1997, now has yet another *Monopoly* in its sights. We're referring here to the classic Parker Brothers' real estate trading game that has left generations of dice-rollers fearful of landing on Boardwalk. Now, with the *Star Wars Limited Collectors Edition*, the dynamics

Collectibles have changed for this most beloved of all board games. Instead of fighting before the game begins over who gets to choose the race car marker and who gets stuck as the thimble, you can instead do battle to decide who plays as C3PO and who gets to be Darth Vader (who, it seems to us, has the perfect makings of a ruthless real estate tycoon). You needn't fear landing on Boardwalk any longer — it's been replaced by the Imperial Palace — and instead of building hotels on the board, you're landing Millennium Falcons. Yesterday's pastime has married tomorrow's cosmic vision and come up with a winning hybrid. For further information, check out the manufacturer's website at www.pbconsumer@hasbro.com.





The Themes Are Out There

SF theme music has a magical place in our memories. At the start of each show it invites us into the action that follows, and then lingers on to echo in our minds long after the show is over. Listening to theme music can bring the entire experience vividly back to life. The first four notes of Alexander Courage's *Star Trek* theme still have the power to chill, even after 30 years. Now *The*

Audio

Cult Files, a two CD set from Silva Screen, provides the catalyst for dozens of similar SF flashbacks. The first CD covers television, and provides 20 cuts, including new hits like *The X-Files* and *Babylon 5* as well as old favorites such as *The Prisoner*, *Doctor Who*, and *V*. The second CD focuses on movies, and includes 14 titles, such as *Alien*, *Blade Runner* and *2001: A Space Odyssey*. For further information, Silva Screen can be reached at silvabop@aol.com.

Listen to the Force

As these words are being written, the re-released *Star Wars* is breaking new box office records, and by the time you read these words, all three films will have invaded your local theaters. The question for regular read-



ers of these pages isn't whether you went to see them, but rather, how many times. But the smell of stale popcorn can be endured for only so long, and even true fans must seek other ways to relive the excitement. One way is through RCA Victor's two CD set, *Star Wars: A New Hope*, which presents John Williams' complete 88 minute soundtrack for the first time. (Earlier soundtrack releases were cut to 77 minutes.) In addition to the extra 11 minutes, the set also features an illustrated 32 page hardcover book, and aural delights such as all five takes of *A New Hope's* main theme, so you can listen to the behind-the-scenes



tweaking that made greatness happen. If the London Symphony Orchestra's traditional approach doesn't bring back enough memories, you can always go disco! *The Best of Meco* from Polygram Records presents a sort of Luke Skywalker meets The Village People look at the triumphal theme, in a single that hit #1 on Billboard's pop chart on October 1, 1977. "Since everything then was disco," said Meco, "why not be able to dance to *Star Wars*?" Other movie music given the disco beat include the themes from *Close Encounters*, *Star Trek*, and *Superman*. It's time to get the white polyester suit out of mothballs and boogie with Chewie!



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Seeing 2020

First it was 1984 we were supposed to be worried about, or so George Orwell warned us. Then Arthur C. Clarke asked us to marvel at the future of 2001. Speaker of the House Newt Gingrich went retro on us when he recently co-authored the novel 1948. Now Vertigo, the envelope-pushing imprint of DC Comics, is hoping that another year will enter this pantheon of memorable dates — 2020, a year when all your worst predictions have come true. Jamie Delano, famed for his scripting on *Hellblazer* and *Batman: Man-Bat*, has created a terrifying look at a world just twenty-three years away. *2020 Visions* is a 12-issue maxiseries that tells the tale of four generations of Americans struggling to stay alive in the tumultuous Dis-united States of America. Four different artists — Frank Quitely, Warren Pleece, James Romberger and Steven Pugh — will each draw three consecutive issues of this post-millennial saga. Together, they will portray the coast-to-coast cataclysm that has brought bizarre plagues, secessionist militias and underground biotechnology to settings as diverse as New York, Miami, Montana and Los Angeles. Each 32 page color issue is \$2.95 and is accompanied by a photomontage cover by John Elder. This is definitely not your parents' comic book, and is suggested for mature readers only. For further information, check out DC Comics Online at keyword "DC Comics" on America Online.



NEW ON VIDEO

Here are some of the latest hits just unspooling your video store for your home viewing pleasure:

Space Jam: Michael Jordan meets the Warner Brothers' toons in this mix of live action and animation that goes one step beyond *Who Framed Roger Rabbit?*



Inspired by the successful series of Nike ads, over 11,000 visual effects shots were used, equalling 66 minutes of the film's 78 minute running time. Also featuring Bill Murray, Danny DeVito, and *Schindler's* Wayne Knight.

Star Trek: Bascals and rogues have always been popular in film and television, and science fiction is no exception. One of our favorites has always been Harry Mudd from the original *Star Trek*. To make sure that a new generation is introduced to actor Roger C. Carmel's charming creation of Harcourt Fenton Mudd, Paramount is releasing *The Mudd Pack*, a two-cassette

boxed collection of episode 4 ("Mudd's Women") and episode 41 ("I, Mudd").

Leprechaun 4 in Space: If you need any further proof that the spirit of Ed Wood still lives, check out the latest installment of the adventures of this creepy little elf. This time, the smallest B movie horror king, as played by Warwick Davis, is joined by *Baywatch*'s Rebeckah Variton. No longer on Earth, the corny, campy leprechaun kills intergalactic marines, kidnaps alien princesses, and continues to spout his nasty one-liners.

Sci-Fighters: Ex-professional wrestler Roddy Piper has been carving a name for himself in sci-fi cinema, most notably in John Carpenter's 1988 paranoid vision of alien invasion, *They Live*. His latest thriller, set in Boston in the year 2000, has the rowdy one as a renegade cop tracking a rapist only to discover something more terrible than crime — the fact that the criminal he's hunting has been exposed to a mutagenic virus

that's turned him into a methane-breathing alien whose task is to prepare Earth for alien habitation. Also starring Billy Drago (*The Untouchables*).

The X-Files: Six new episodes of this cult smash hit the stores, if any show that won five 1995 Emmy Awards — more than any other TV show that year — can still be considered a cult phenomenon. The six uncensored episodes — two each per tape, are "Sleepless," "Deane Barry," "Ascension," "One Breath," "Little Green Men," and "The Host." Behind-the-scenes interviews with Chris Carter, the show's creator (and the mind behind *Millennium* as well) are an added bonus.



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By Arlan Andrews and Geoffrey A. Landis

Ice on the Moon may allow us to venture into the rest of our solar system.



ABOVE: The Moon as it yet could be, if we correctly capitalize on our most recent discovery. Art by Don Dixon. **BELOW:** The familiar face of the distant, forbidding Moon.

EACH PASSING DAY, IT SEEMS, BRINGS EVEN MORE astonishing scientific advances, and few have more consequences than the recent discovery of ice on the Moon. The implications for the future of manned space exploration are enormous, so we recently brought our Science Forum together online to examine just what this portends.

Dr. Arlan Andrews, Sr. is a technology consultant and high-tech entrepreneur. He is President of Andrews Creative Technologies, a founder and CEO of Survival Technologies, and a founder and former VP of MuSE Technologies, which markets the world's most advanced Virtual Reality software. He served as a fellow in the U.S. Department of Commerce and the White House Science Office from 1991 to 1993, in both the Bush and Clinton administrations. Geoffrey A. Landis' fiction credits include the Hugo Award winner "A Walk in the Sun" and the Nebula Award winner "Ripples in the Dirac Sea." He works for the Ohio Aerospace Institute at the NASA Lewis Research Center.

LANDIS: I was at the Cape for the Pathfinder launch last month. As I was driving back from the launch viewing area at 2:30 in the morning, after the launch was delayed a day, I heard the news on the car radio that the Clementine science team had officially announced they'd found ice at the south pole of the Moon. It was really exciting.

ANDREWS: My first thought was — "Ice on the Moon! Gee, just as God and Werner von Braun planned it!"

LANDIS: Clementine was a "Star Wars" satellite, designed originally to test our missile tracking technologies for ballistic missile defense. The actual radar measurements were made in 1994. This actually wasn't the first time that the Clementine team announced the discovery of ice at the pole — the news has been around the space world for a while, and it had actually been announced two years ago, when they first got the data back. They withdrew that announcement immediately, and said that they had to do more analysis to confirm it. I can assure you that these have been eagerly anticipated results!

ANDREWS: The details of the discovery were announced in the Defense Link News web site, in a memorandum for correspondents (www.dtic.mil/defense/links/news/Dec96/Dec96.html).

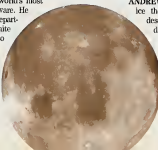
LANDIS: The ice was discovered using radar. The result is still somewhat controversial — not everybody thinks that the analysis of the data is unquestionable. They used an unusual kind of radar known as "bistatic" radar. This means that the radio wave transmitter is located at a different place than the receiver. In this case, the transmitter was on the Clementine spacecraft in orbit around the Moon, and the receiver on Earth.

ANDREWS: The news releases state that the analysis of the radar data indicate a strong possibility of ice at the South Pole of the Moon — about the size of a small lake, namely 60-120,000 cubic meters — or, four football fields 16 feet deep. It has not been photographed to my knowledge; so the evidence is not yet perfect.

LANDIS: It would be great if we could photograph the ice, Arlan! Unfortunately, there's a problem there — the only reason the ice is there, is that there is no sunlight in the permanently shadowed craters! So when you take photos from orbit, it's dark!

ANDREWS: I've been wondering about the ice there. The south pole crater is described as having its rim in constant daylight, and its bottom — where the ice might be — in perpetual darkness. This can't mean that a comet plowed into the south pole alone.

LANDIS: No, the theory is that comets randomly plow into the Moon every 10,000 years or so. The ice from the comets vaporizes, and the gas goes all around the Moon — a



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ting, temporary atmosphere. At the extremely low temperature at the poles, it condenses out.

ANDREWS: Thus, the whole Moon must have had at least momentary (geologically) conditions in which ice was deposited and lasted a while. I would guess that solar radiation has driven off the rest, but there exists the possibility now that perhaps other cracks and crevices or buried ice fields might be found. Can we identify other cracks and canyons that stay in the dark?

LANDIS: Well, if you get very far away from the poles of the Moon, the subsurface temperature isn't very cold. One way to look for ice will be using a gamma-ray spectrometer from orbit. This is going to be done with the Lunar Prospector mission, launched this year. The Clementine data was in the form of the ratio of right-circularly polarized reflection to left-circularly polarized reflection. I have heard a few scientists complain that the Clementine team should have spent more time thinking about alternate hypotheses that explain the data. But then, that could just be jealousy — they didn't find it first!

ANDREWS: As quoted in *Space News*, in an article by Leonard David, Col. Pedro Rustan simply said that, "The data strongly suggests the presence of ice. The data looks very encouraging."

LANDIS: Lunar Prospector will, we hope, nail it.

SF AGE: Please explain to me and the



ABOVE: When mankind returns to the moon, perhaps our explorations of the cavities and craters will uncover ice that could provide the means to move on to other planets.

readers about scientific peer review. When I mentioned the subject of this Forum to Arlan, he said something like, "Oh, that's old news; the scientific community has known about it for years." Why is that?

ANDREWS: The space community, as Geoff said, knew two years ago that the initial data might indicate ice on the moon. It just took a long time to study the data to be more nearly sure of it. If you stay up on all the latest gossip in this field as in many others, you'll

occasionally know before the newspapers do. On the other hand, you wade through a lot of junk as well.

SF AGE: So what exactly is the controversy as to the interpretation of the information? Why the disagreement?

ANDREWS: There have been suggestions from my end of the political spectrum that the Lunar Prospector results about the location of ice not be given to the world, but kept as a national resource secret. As prospective

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Apollo XVIII astronaut Phil Chapman said last year, the ice at the south pole could be worth as much as \$9 trillion to the nation that utilizes it.

LANDIS: I've never heard this one before. **ANDREWS:** The reason that this is so exciting is that it means that the Moon has a lot more of the elements needed to sustain not only life but an industrial infrastructure — we could use those well-lit peaks and that dark ice bed to set up a plant for generating oxygen and hydrogen cheaply. As I quoted Phil Chapman, that ice is worth about \$9 trillion, in savings of mass to be hoisted to the Moon. Why give it to the Japanese, who are planning lunar colonies, or to anyone else?

LANDIS: I don't think that it's actually reasonable to withhold the Lunar Prospector data. First, it's a NASA mission, and NASA missions are public property. But, more to the point, you can't. Once you know what to look for, everybody knows how to look.

ANDREWS: Lunar ice is brought to you by the same folks who gave us the end of the Soviet Union, among other things. Their impetus is the military edge that space brings to the first and best — and the lunar ice could be the foundation for a lunar military system.

ANDREWS: There is no reason that NASA couldn't keep the data encrypted and useful only to the United States.

LANDIS: Except the fact that NASA is a civilian army. And Lunar Prospector is a bargain-basement cheap spacecraft. Not much more than a gamma-ray spectroscope, a solar panel, and a radio. Anybody could make one, really.

ANDREWS: No — not everybody can launch Lunar Prospector missions, nor follow them up with a Marine force that can occupy and defend one's territory.

SF AGE: Just because we find it first, Arlan, doesn't mean we own it. After all, who owns the moon? What do the treaties say?

ANDREWS: There are no treaties that cover this, are there? Anyhow, who's going to argue with the first Seal Team that claims the ice pole for the U.S.?

LANDIS: Well, sending a military force to claim the area is a different issue — you were talking about keeping the location secret, and that just can't be done. It's too easy to find, now you know what to look for.

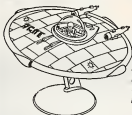
ANDREWS: Let's not kid ourselves. If space flight is ever going to be self-sustaining, it won't be through tax dollars. Eventually it has to turn a profit, and the people who can get to and use that ice pond are going to do quite well — assuming that they don't have to share the profits with the UN. It's been called "The Cold Rush" — to gain access to the most valuable piece of real estate in the solar system (so far).

SF AGE: What's the Antarctica precedent? **ANDREWS:** Antarctica is different — nothing there that anybody really wants, so in the Cold War days all sides divided it up into scientific stations. If something valuable were

Continued on page 97

UFO. Rockets. Robot.

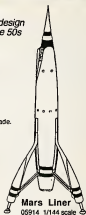
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Bullfighting was so old fashioned.
The only worthy challenge for Frank Lazaro was a stampeding herd of triceratops.

All the way from the Greater Waco Suborbital Port, Frank Lazaro still felt weightless. That, and the constant drone of the slot machines made the neon-holo Texas landscape seem all the more unreal. Was he really there in a limovan, heading for the Hotel Apocalypse?

For a moment the sky was filled with a snorting triceratops, jabbing its nose-horn into the pneumatic ass of a cute cowgirl, who winked and took a bite of a tricerburger. Frank shuddered at the sight. Casting his eyes earthward, he saw one of the many monuments to martyrs from some recent historical incident.

He wondered if his wife was right to doubt his sanity.

"MID-LIFE CRISIS," ALMA HAD SAID, SHAKING HER HEAD. "I GUESS THIS IS another one of those things I'm going to have to put up with."

She had sighed. And had given him the same look she always gave the dog after he had destroyed something. She had forgiven Frank already. Great. He could start feeling gaily now.

He had cringed receiving that look. Sometimes he wished she wasn't so understanding.

And this sure had been her year to be understanding. He had lost his job as a sports reporter ("You're hitting middle age, Frank! You're material is getting, well, a little tame for our audience ...") just as Alma was being named the CEO of the smart appliance software company that she helped found ten years ago.

"Why don't you write that novel you've been talking about since we were dating?" was all she had said about it.

And then his daughter, Masako, had announced that she was going down to

the newly established People's Republic of Amazonia to join one of the neofuturo tribes.

"It's the way of the future, Daddy," she had said, and then showed him how she would paint her face and body to run naked in the rain forest. This wasn't exactly the ideal condition for his brain to start hatching a Great American Novel.

Instead he had ended up doing a lot of net cruising. At first it was under the pretense of research; but soon he was becoming the

sort of person he had always made fun of, an aimless surfer of non-interactive entertainment services with

a bloodless finger on the remote upchannelling through everything: the soap operas from all over the globe; the infobawking of things that would vastly improve your life for a price; video music; the old time entertainment media; the specialized news nets ... and, oh yes, the sports channels. Even good old PRSN, the Pacific Rim Sports Net, where a new variation on indoor surfing was all the rage. This version involved pools of piranha, and was sponsored by

FRANK'S TRICER run

BY ERNEST HOGAN
Illustration by Jack Harris

the makers of bullet- (and presumably tooth-) proof wet suits. And as always, the score of the World Series of Mayan Basketball scrolled across the bottom of the whole mess.

He had come up with an idea for a sidebar piece on piranha surfing, reached for his palmtop, and then froze as he remembered.

That's right. He didn't have that job anymore. Didn't have to get those ideas or think those kinds of thoughts anymore.

If only he could convince his brain of that.

Disgusted, he had hit the SPORTS ONLY key of his remote and some random selection had flashed by: orbital sumo, ultrabulldogging, traditional baseball from Cuba, urban climbing from a new skyscraper in Paris, a moose truck rally in Beijing...

Sports were different these days. Maybe the net execs were right. Maybe his era was over. Perhaps it was time to stop aside and make room for the young kids...

Then a face had flashed on the screen. A magnificently beautiful face.

His heart had skipped a beat.

The face had been replaced by an Antarctic ice boat race, then a musclebound humanoid of undetermined sex lifting a bus full of giggling school children, then...

He had hit RECALL, and then STAY, making the face return.

It was the face of an extremely beautiful young woman. She couldn't have been more than ten years older than Frank's daughter. She had sparkling, jet-black eyes, skin the color of cinnamon, and glowing, platinum-blond hair. She was Pilar Felix, one of the world premier, up-and-coming young ultrabulldoggers.

Suddenly she had been replaced by a shot of a large, muscular triceratops, grazing in an indoor field of grass. White-coated technicians watched and took note on cyberclipboards. The triceratops, the white coats, and the cyberclipboards all bore the smiley-face logo of Happy Corp.

It had cut back to Pilar before Frank could change channels. He had always been the sort of guy who preferred grown women, with experience smoldering behind the eyes and a little meat on their bones — like Alma. But there was something about that soft, strong, youthful glow that stirred something inside him. Something that he thought had died years ago.

"I believe that the introduction of bioengineered triceratopses will revitalize the art of bullfighting," she had been saying.

"What do you have to say to the traditionalists who claim that this is essentially taking tauromachy out of bounds?" asked the mustachioed interviewer.

Pilar's exquisite nostrils had flared.

There had been an obligatory cut-in of the interviewer grinning.

"That's what people said when they started using modern technology to make bigger, better, and smarter bulls!" She became even more gorgeous when she was angry. "And that saved the art from extinction! I can deal with a beast with an extra horn! The more horns, the better! This is progress!"

Yes, Frank found himself thinking, *progress!*

"And what about the terrorism that has plagued bullfighting for the last few years? Could that spill over into the new sport?"

Pilar had exploded with contempt. "Let them come! I'm used to slaying monsters! I dance with death for a living! Amateurs do not scare me!"

He had watched the rest of the interview with a religious intensity. By the time a Stetson-wearing pitchman had come out howling about the joys of riding a motorcycle among the "tricers," and how good triceratopses tasted, Frank was salivating.

Motorcycles. He hadn't ridden one since his accident. There was a time when he hadn't wanted to drive anything else. How he missed his old Harley.

He found himself on-line, registering to attend the First Annual Texas Tricer Run.

"You know these bullfight-spinoff things are controversial," Alma later warned him. "And it's in Waco, of all places! There certainly will be protests, and probably terrorism."

When he had grinned at the sound of that, she had added, "And I

don't like the idea of you riding a motorcycle, Frank. You know what happened the last time."

That had killed his grin.

Then Misako had called, lecturing him while in a full-lotus position: "Daddy, you're being tempted by the dangers of so-called civilization. You and Mom should really give it all up and join our tribe. Get back to nature. Let the rainforest revitalize you."

All the while, in the background, her boyfriend had wheeled around with an antique electric guitar.

NOW THAT HE WAS THERE, HAVING SURVIVED THE GAUNTLET OF THE screaming protesters who were burning an effigy of a long-dead talk show host, and after negotiating the labyrinth of the casino lobby, checking into the Hotel Apocalypse didn't seem any more real. He got his key and registration package from a halcyon, winged desk clerk. A bellhop with horns and cloven hooves grabbed his bags and led him to the elevator that belched holoimages. On the ceiling, animated averging angels rained down the Wrath of God.

Why the hell did Alma have to be so understanding, anyway? How was he going to survive?

He was surrounded by all kinds of people who seemed to be out of their minds, behaving in ways that made him long for the civilized, climate-controlled comfort of Honolulu. The Oakland Amazon team belched their anthem. A group of Free Scots in warpaint whooped and yodeled. The Carnivore Pride Society sponsored a giveaway of tricerburgers that were being fiercely devoured by glittering Bosnian playgirls and boys, members of Hell's Angels International, and various other men and women with bizarre idiosyncratic associations.

Frank focused his eyes on the carpet. It was all flames, demons, and sinners, interlocking in all directions. An inferno times infinity with beverage and body fluid stains. He trod carefully.

IN HIS ROOM WAS A SPEED SECURITY CHIP FROM ALMA. HIS HANDS SHOOK as he snapped it into his palmtop.

There she was, more beautiful than she had been on the day she had married him. She gave him that smile that made it impossible for him to keep secrets from her.

"Frankie, darling," she said. (Before he had met her, he had hated to be called Frankie, but in her voice, it just sounded right.) "I just wanted you to know that I love you. I realize that the last few years have been difficult for you. I know that you need to do this — you need to do *something* to get yourself back on track. I know that you love me, and all I ask is that you don't forget about me whatever you find yourself doing."

She winked at him, and the camera auto-adjusted back. She was naked and on their bed. She proceeded to give him a performance that made him wish he was back on that bed with her.

Afterward he had blanked the chip — possession of such things could land you in jail in this part of Texas, even in a gambling zone — and took a long, cold shower.

AFTERWARD, HE WATCHED THE TRICER RUN ORIENTATION CHIP, WHICH featured Pilar being interviewed by someone Frank used to work with — a delicate little Afrosian woman with the face of an angel and the personality of a cheap android.

"Hi, y'all! I'm Traci Kuboye, and welcome to the First Annual Texas Tricer Run right here in my hometown, Waco, Texas! The planet's hot new vacation spot! This here is Pilar Felix, one of the world's foremost ultrabulldoggers."

Pilar smiled a human smile. "Hello, my friends."

Frank was captivated.

"So," said Traci, "what should our eager participants be doing now that they've checked in?"

They then discussed the rules and equipment. These instructions were things Frank had gone over many times in advance. He was tempted to fast-forward, but looking at her was too enjoyable.

Then an idea hit him, hard.

He had written copy for Traci for six years, since she had come to

PRSN fresh out of college. He could use her to arrange a meeting with Pilar. He could say that he needed to talk to her to get some material for his novel.

It wasn't that he wanted to cheat on his wife or anything. It was just that Pilar was the main focus of this event, and she just happened to be beautiful, young, sexy ...

He had a hard time sleeping that night.

THE NEXT MORNING HE FOUND HIMSELF in his colorful plastiplex armor, in a huge ballroom full of similarly dressed people. First they all lined up for a coat of paint; if they were lucky and skillful enough (but mostly just lucky), they would get just close enough to the tricers to get some of that paint scratched off by a sharp horn or two. After all, what good was a brush with death if you didn't have the proof? Afterward everyone was served a "bullfighter's breakfast" — black coffee with a shot of cognac (which was optional for the alcohol-sensitive).

Before the final preparations began, Frank spotted Traci doing some test with the sound equipment. Knees shaking, he got up and walked up to her. Her perpetual smile took on a cruel tone at the sight of his sheepish grin.

"Frankie!" she embraced and kissed the air around him. "It's so good to see you again! Don't tell me! You're here as a participant! I can't begin to tell you how adorable you look in that armor!"

He blushed. She ate it up.

"I, uh, "he tried to explain.

"Are you doing this for some kind of freelance thingie?" she asked, eyelashes a-flutter.

"Uh, yeah," he said. "And I thought, uh ... I'd like to meet — I mean, interview Ms. Felix."

She squinted and pointed at his forehead. "There's a vein throbbing right there!" Her tiny, well-manicured finger almost touched him. "I've never seen that before! And, oh my! Are those perspiration beads forming on your upper lip?"

"I'd really appreciate if you could arrange an interview for me." He looked sheepish and embarrassed.

"I've never seen you so nervous." Her smile became predatory, and more than a little sadistic. "Do you have a crush on her? Don't tell me you and Alma are having rough times since you got fired?"

"Well, actually," he said, "no."

"You two were so cute together," she went on without a beat. "Oh well, nothing lasts forever! I'll see what I can do, even though I think Pili is a bit out of your league, but then who knows ... you look so adorable in this armor."

Her nanochip-laden fingernail came a few delicate millimeters from scratching the armor plate just above Frank's heart. Then she turned away, cutting him off as if he was just another channel chugger.

Feeling like a complete idiot, he made his way back to his seat.

He had barely sat down when the shockwave from a moderate explosion blew him off his feet. He landed armpits first, still somehow managing to hold onto his ecofoam coffee cup (though its contents were now everywhere else).

Most of the excess energy from his fall was absorbed by a collapsing table. Before he could get used to being a twisted, coffee-and-cognac-soaked heap on the floor, several guantleted hands took hold

of him and pulled him to his feet.

"Determined to get banged up early?" said a man with an accent that Frank couldn't identify.

"Hey," another man with the same accent said, "are you all right?" Frank tried to talk, inhaled some smoke, and coughed.

A third guy immediately slapped him on the back. Frank coughed again.

"Do you need medical assistance, sir?" a very young feminine voice said.

Being called *sir* hurt worse than the fall.

"No," he said, his voice garbled as he cleared his throat. "I'm okay."

The young woman's voice was familiar. Her face was even more familiar. It was Pilar Felix. He nearly fell again.

The accented men held him up. He couldn't help noticing that they were also fashionably olive-skinned (they could have been melanin-adjusted — their skin was the exact, same shade) and all three sported identical Fu Manchu mustaches.

"Uh," Frank said, "I'm all right."

His armor thudded from back slaps and elbows to the ribs.

"No," one of the Fu Manchus said.

"Hey," said another, "he's A-okay!"

"A real tough guy," said the third, "can't you tell?"

Pilar looked Frank over. Her eyes narrowed into slits. Her frown was to the fore. Frank almost did.

No, he ordered himself. He was not going to be a classic geek. He forced a tough-guy smirk, and stood up straight, noting that he was about half a head taller than Pilar.

"I guess you look all right," she said. "You did sign all the waivers?"

"You bet!" He pointed his finger, pistol-like, at her.

"Then have a nice tricer run," she said.

Suddenly, the public address system kicked in:

"Excuse us, ladies and gentlemen! It was Traci. "We have experienced some technical difficulties, please bear with us while our technicians sweep the area."

Figures in bulky protective gear began to make their way through the ballroom, waving impressive-looking, wand-like devices.

"Explosive-sniffers," said Frank. "Could this be corporate terrorism?"

The Fu Manchus went into a chorus of "Nah's."

"There's no such thing in this industry."

"The company security is too good."

"What an imagination you have."

"Yeah," said Frank, "I am a writer."

The Manchus went "Ah!"

"You going to tell the world what running with the tricers is really like?"

"Yeah, none of that media glitz."

"Good for you, sir."

"Please," Frank said, "I'm Frank Luzaro, I'm, er, a novelist from Honolulu."

"Really, how interesting."

"Do people still read novels?"

"We're accountants from Uruguay."

"My name is Joe."

"Mine's Juan."

"I'm Wole."

Frank tried to make the expected manly small talk, but he really wasn't interested about their boring lives in the Uruguayan metro-sprawl, and why they felt that riding with the triceratops was going to change their lives. Pilar was walking away. She was wearing her usual shocking pink bullfighter's suit, with skin-tight pants. It was a lovely view.

But it was too late. Male bonding had taken place. He had three buddies who were going to see him through his ride with the triceratops.

"LOOKS LIKE WE'VE GOT EVERYTHING UNDER CONTROL," SAID TRACI over the public address system. "No sign of serious explosives. Looks like that was just a harmless little firecracker. Just a bit of

Texas-style fun! Hell, we probably won't be bothered by anything more serious than the protesters outside. And what's Waco without protesters?"

What indeed. After the burnings, bombings, and riots for the last few decades, Waco had become the constant backdrop for protesters. Now they were protesting the development of the resort complexes, and they kept right on doing it as the tourists — who expected them — took pictures of them.

"Time for the final paint-down, line up and be ready!"

Soon Frank, Joe, Juan, and Wole were going through the line to the wall that opened up like some vertical blinds into the Texas sun.

THERE WAS A WRITHING THROING waiting outside. Texas Rangers in heavy riot armor held them back. The press was in force with the latest in light-weight helmet cams. Locals and tourists gathered to gawk — even in this day and age, there were those who preferred to be spectators. Then there was the noisiest group — the protesters.

They weren't a united front. People were offended by this event for a number of reasons:

Certain religious sects found the entire business harmful to the spirituality of the planet.

Vegetarians objected to the blatant celebration of carnivorousism.

Animal rights groups didn't like that poor, dumb animals were being exploited.

Safety activists didn't like that poor, dumb humans were allowed to abuse themselves.

Then there was world-renowned paleontologist Pablo Redondo, who had been extremely vocal on the world nets about the Tricer Run's negative effect on the science of paleontology in particular, and the future of civilization in general. He was restating his argument at the top of his lungs:

"These 'tricers' — so-called triceratopses — aren't anywhere near to being accurate recreations of any extinct species. In examining their anatomical charts, I have found hundreds of mistakes and downright alterations with the intent of making them more suitable for this ridiculous excuse for a sporting event!"

As usual, Traci was on the spot, interviewing anybody who was anybody. "But what about the argument from many educators that the Tricer Run is sparking the imaginations of children and their desire to study science?" she asked with a predatory earnestness.

"Puppycock! This isn't science! It's pure spectacle! Bread and circuses! Was anybody ever inspired to improve himself by watching organized brutality?"

Redondo went into a violent coughing fit. His assistants — all young, attractive women — came to his aid, and pushed his wheelchair out of the range of the cameras.

Frank took a deep breath, looked straight ahead and kept walking. It was a normal walk, not a march or a strut. He found himself feeling silly and a little embarrassed.

Smiling young people in costumes that were an awkward cross between rincestone cowboy outfits and the bullfighter's suit of lights led him to his very own motorcycle. It was one of the new Lakota Road Dog electric with a superconducting engine.

Frank paused.

He had started riding motorcycles when he was courting Alma.

Those were the days of the earliest electrics. He still had fond memories of the Harley Thunderhead that he kept until well after Masako was born. But of course, that had all ended with the accident. ...

He had shattered the ball-and-socket joint in his left shoulder and fractured his left hip. Masako had been too young to realize what had happened; but Alma had been devastated. The Harley had been destroyed. So had his career as a biker.

He had promised Alma he'd never do anything like that again. But he hadn't promised not to practice on a virtual reality program. After all, you can't break your neck in virtual reality. ...

His hands hovered inches from the motorcycle.

She had known that this adventure would involve his getting on a motorcycle again. They hadn't talked about it. But there had been something in her eyes when she had given him her blessing. ...

"Hey, Frankie-boy," said Joe.

"Having second thoughts?" asked Juan.

"You aren't planning on chickening out, are you, old man?" asked Wole, with a smirk.

"Uh," said Frank. "No. Actually, I was remembering an old motorcycle accident."

"Reliving an old brush with the grim reaper?" said Joe.

"Kind of makes this whole thing more exciting," said Juan.

"That's it, Frankie-boy," Wole slapped Frank on his back. "Get right back on that horse!"

Suddenly Frank felt moisture on his neck. But it wasn't sweat. It was leaking in through the cracks in his armor.

Joe, Juan, and Wole abruptly took a few steps backward.

Frank took a step forward, a sort of hop he hadn't done in years. His hands met the grips. His body landed in the seat seemingly without impact.

Joe, Juan, and Wole, and many of the people waiting in line behind Frank broke into applause.

There was a hint of sarcasm in some of it, but Frank didn't mind. On the motorcycle, he felt younger, stronger, more powerful. Powerful enough to run with the tricers.

When Pilar revved her bike and looked back at the assembled participants, he believed that her eyes met his.

"Ladies and gentlemen," Traci's voice rang through his helmet earphones, "start your engines and be ready to go —" A massive reverberation almost drowned her out, so they amplified what came next: "THE TRICERS ARE COMING!"

The Texas earth rumbled.

Frank suppressed the urge to turn his head. Looking through his rearview, he saw the mounted horde behind him, and further back, a huge cloud of dust.

"REMEMBER, NOW, Y'ALL DON'T WANT TO START OFF TOO SOON. YA GOTTA LET THOSE BEASTS GET REAL CLOSE. YA WANNA HAVE SOME SCRATCHES ON YOUR ARMOR TO TAKE HOME."

Horns soon became visible through the dust. They were long and curved, strangely unlike those of the triceratopses everyone was familiar with from decades of kiddie cartoons. As the promoters of the event had said, "The tricer was the prehistoric equivalent of a bull — except they were wild."

Wild, yes. And powerful. Terrible.

There was, creeping up Frank's spine. Fear. Like the time years ago, when he had found himself flying through the air, his bike sliding away from him, a rough patch of pavement skimming toward him. Once again, his life, images of Alma and Masako, flashed before him. He could die. Today. He knew that.

Under the gauntlets his knuckles turned white. A bead of sweat dripped down his goggles. His mouth went dry.

He could smell the approaching dust cloud, and tasted it as he licked his lips. He could feel every ponderous, saurian footfall rattling his skeleton.

The rearview mirror shook, making it harder to see the horned phantoms in the dust. There were hundreds of them, thundering toward the widely spaced tricer runners, all straddling their Road Dogs. Everyone was waiting stiffly. Some armored bodies were shak-

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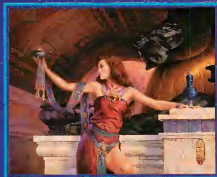
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ing, and it had nothing to do with the rumbling earth.

A rider next to Frank took off, too soon.

His hands shook as he held it on neutral, gave the throttle a squeeze; the superconducting electric engine purred viciously, daring him to pop the clutch, let her rip.

No, he had spent a lot of money, had made everyone he knew and loved doubt his sanity for this. He was determined to do it right. As other runners sped by him, he stood there, waiting. Just waiting until the tricers were right on top of him, close enough to scratch the surface paint of his armor.

It didn't take long.

Soon he could see their eyes, burning like orange coals in the afternoon sun, cutting through the dust like shark's teeth.

He never thought a triceratops' eyes could be so terrifying. Several pairs focused on him. Several tris of horn pointed at him.

The Fu Manchus stuck close by Frank. They almost seemed to be herding him into the tricers. He wasn't sure if they were a help or a hindrance.

Just as he took off, he could feel hot tricer breath heating up his armor.

He didn't have time to feel proud. He had to keep up the speed while avoiding thrusting horns and his fellow runners, some of whom had become separated from their bikes. It was like rush hour Honolulu traffic on fast forward.

He wasn't sure if he could handle it, but he did anyway.

The Fu Manchus suddenly became tangled with a tricer. One of them went flying, the other two skidded across the ground. Adrenaline turned Frank's fear into a supernova emotional high.

For a moment he was free and clear, by himself. He looked into his rearview. A pair of inhuman eyes looked back at him. He couldn't look away from them; something about them had changed. It wasn't just the dust cutting down the sun reflection. Those eyes looked softer, yet hotter. Smoldering. Frank didn't know what it meant, but he was horrified.

He felt it moving up next to him before he saw it. The tricer was pacing him. At first, it seemed as if it was just going to keep him company, just run alongside him as if he were part of the pack. Then it dipped its horns, almost casually.

It picked its target with astonishing intelligence. The tricer hooked Frank's bike under the seat and the rear guard, lifting it so that the rear wheel spun far from the ground. The tricer slowed down, then came to a full stop.

Other tricers converged on them. Their eyes held Frank with that strange, terrible gaze. He cut the engine and white-knuckled the grips.

As the beasts stopped to surround Frank, bikes and riders went falling and flying in the traffic snarl. Media helicopters circled closer like flies to a rotting carcass. Human sweat mingled with saurian calls.

But those calls were not the growling triceratopsian war cry they had all been trained to expect. This was more like very deep purring. It was like the difference between the rumbling noise of ancient gasoline engines and modern electric motorcycle engines.

The vibration from the tricer that was holding Frank's bike went right through the bike and armor, into his body.

He nearly wet himself.

In a sudden, instinctive panic, he released his death grip on the bike. Not having realized where he was going, he stepped out into midair and fell through the triceratops' two upper horns, onto its snout.

Lifting its great bony head, the tricer gently disengaged its horns from the motorcycle. Then it began to gently rock Frank, who was holding onto its leathery skin for dear life.

The other tricers were jostling close, a forest of horns moving slowly, freakishly slowly, toward Frank. One of those horns pierced Frank's armor across his back. The beast underneath him stopped purring and started roaring.

Pain suddenly came like a splash of molten lava, then melted into inky blackness.

ONCE THE BLACKNESS HAD EVAPORATED, HIS EYES WERE SCORCHED BY harsh lights. He was in a sterile bed, tied down with restraints. Tubes and monitors penetrated his body at various intervals. The pain was muffled with drugs, but it still hurt like hell.

"My god," a very, very familiar woman's voice said. "His eyelids are fluttering — there! He's waking up."

"Alma?" Frank asked, his voice cracking.

A hand wrapped around his "Yes, honey, they shot me out here."

"What?" He tried to focus his eyes.

"Do you think he's ready for a pre-interview debriefing?" asked another familiar female voice as a blur rushed toward him.

"Please," said the closer blur, who grew more and more to look like Alma, "he needs rest!"

"What," Frank closed his eyes, and groaned, "happened?"

Alma gently squeezed his hand. "It was terrorists, Frankie."

"Gaucho's Global sent in some disruption specialists," said the other blur, as it coalesced into Traci. "Remember those three guys who were riding next to you? They sprayed you with female tricer pheromones. The bulls were mesmerized by it. Lucky for you the Texas Rangers got to you before they got too frisky. You could have been loved to death." When she came the rest of the way into focus she was weeping.

So that was what Frank had felt on the back of his neck. Funny, but he had sort of liked the effect. At least until the bulls had caught a whiff of him.

"So it was the Fu Manchus," he said.

"That's an inappropriate term," said Traci, with professional disapproval.

"I was talking about their moustaches, not their ethnicity," Frank was getting irritated.

"For god's sake get out of here and get the doctor!" said Alma, grabbing Traci by the electronic devices attached to her collar and thrusting her toward the door.

"But this is all very important!" Traci said as she was hurled out of the room.

"Yeah, sure," snarled Alma, slamming the door. She turned back to Frank, softening with concern. "How do you feel, honey?"

"Like I've been run over by a truck," he groaned.

"They say it was the equivalent of several trucks." She leaned onto the bed and put a careful arm around him. "You're lucky that armor did its job."

Their lips were about to meet when the door burst open.

Pilar Felix trotted in, followed by a wake of paparazzi flashes and humming microvideans.

"Oh, Mister Frank Lazaro!" She rolled the r's a little too much. "You are the hero of the Tricer Run!" She leapt to the other side of the bed with the grace of a ballet dancer and planted a kiss that Frank could barely feel on his forehead. It left a bright lipstick trace, like a slightly off-center third eye.

Frank looked at Alma and hissed.

"Sorry, I cannot visit with you longer," Pilar said, "but I have to catch a suborbital. My fiancé is waiting for me in Tangier."

She, and her media swarm, disappeared as quickly as they had appeared.

"Hero?" he said, to no one in particular.

"Yes, darling," said Alma, and she kissed him good and proper. "It seems that for the time being, you're one of the world's favorite foods. Everybody wants to talk to you. We're going to have to hire you an agent."

"Great."

"Even Masako is impressed. She talked her tribe into starting a tricer ranch."

"What about the evils of civilization?"

"I believe her answer was, 'A tribe's gotta eat.'"

He laughed. It hurt.

"I wonder if I'll ever get a chance to write that novel, now that I have an idea what its supposed to be about," he said.

A nurse peeked in the door and asked, "Mr. Lazaro, would you like to speak to the media now?"

He smiled for the cameras. That hurt, too. □

They came from Earth to solve a senseless murder. But once on Mars, all they wanted was to stay alive.

Ecopoiesis

GEOFFREY A. LANDIS

Illustration by Vincent Di Fate

WONDER WHY THEY CALL THIS THE RED planet?" I asked. The rebreather made my voice sound funny in my ears. "Looks like the brown planet to me."

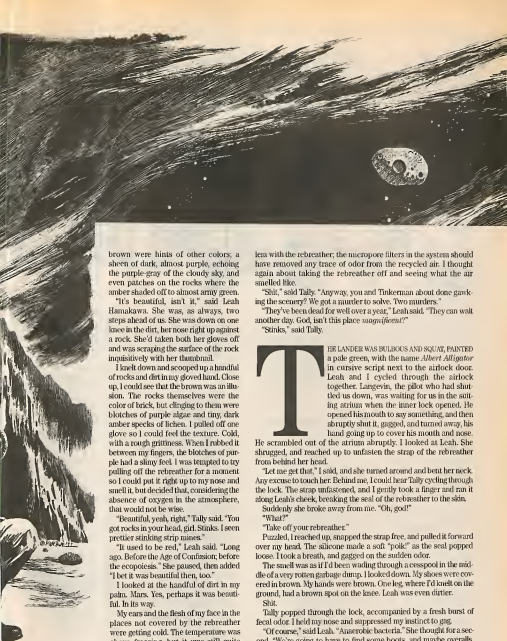
"You got a problem with brown, boy?" Tally said. Her voice was muffled by the rebreather she wore as well.

I turned, but Tally wasn't looking at me; she was watching the opposite direction, standing in a half crouch. That position surely couldn't be comfortable, but for her it looked completely easy and natural. Her head turned with a quick birdlike grace to glance now one way, now the other. Guarding our backs, I realized. Against what?

"Nothing wrong with brown, my opinion," she said.

The more my eyes got used to the terrain, the more colors came out. Brown, yes, barren rocky brown plains and brown buttes and a brown stream frothing over a tiny waterfall. The hills were sharp-edged, looking as if they had been blasted out of bedrock the day before, barely touched by erosion. But in the





brown were hints of other colors; a sheen of dark, almost purple, echoing the purple-gray of the cloudy sky, and even patches on the rocks where the amber shaded off to almost army green.

"It's beautiful, isn't it," said Leah Hamakawa. She was, as always, two steps ahead of us. She was down on one knee in the dirt, her nose right up against a rock. She'd taken both her gloves off and was scraping the surface of the rock inquisitively with her thumbnail.

I knelt down and scooped up a handful of rocks and dirt in my gloved hand. Close up, I could see that the brown was an illusion. The rocks themselves were the color of brick, but clinging to them were blotches of purple algae and tiny, dark amber specks of lichen. I pulled off one glove so I could feel the texture. Cold, with a rough grittiness. When I rubbed it between my fingers, the blotches of purple had a slimy feel. I was tempted to try pulling off the rebreather for a moment so I could put it right up to my nose and smell it, but decided that, considering the absence of oxygen in the atmosphere, that would not be wise.

"Beautiful, yeah, right," Tally said. "You got rocks in your head, girl. Stinks. I seen prettier stinking strip mines."

"It used to be red," Leah said. "Long ago. Before the Age of Confusion, before the ecopoiesis." She paused, then added "I bet it was beautiful then, too."

I looked at the handful of dirt in my palm. Mars. Yes, perhaps it was beautiful. In its way.

My ears and the flesh of my face in the places not covered by the rebreather were getting cold. The temperature was above freezing, but it was still quite chilly. The air in the rebreather was stale, smelling slightly rotten and distinctly sulfurous. That indicated a prob-

lem with the rebreather; the micropore filters in the system should have removed any trace of odor from the recycled air. I thought again about taking the rebreather off and seeing what the air smelled like.

"Shit," said Tally. "Anyway, you and Tinkerman about done gawking the scenery? We got a murder to solve. Two murders."

"They've been dead for well over a year," Leah said. "They can wait another day. God, isn't this place magnificent?"

"Stinks," said Tally.

THE LANDER WAS BULBOUS AND SQUAL, PAINTED a pale green, with the name *Albert Alligator* in cursive script next to the airlock door. Leah and I cycled through the airlock together. Largevin, the pilot who had shuttled us down, was waiting for us in the suit-
ing atrium when the inner lock opened. He opened his mouth to say something, and then abruptly shut it, gagged, and turned away, his hand going up to cover his mouth and nose.

He scrambled out of the atrium abruptly. I looked at Leah. She shrugged, and reached up to unfasten the strap of the rebreather from behind her head.

"Let me get that," I said, and she turned around and bent her neck. Any excuse to touch her. Behind me, I could hear Tally cycling through the lock. The strap unfastened, and I gently took a finger and ran it along Leah's cheek, breaking the seal of the rebreather to the side.

Suddenly she broke away from me. "Oh, god!"

"What?"

"Take off your rebreather."

Puzzled, I reached up, snapped the strap free, and pulled it forward over my head. The silicone made a soft "pop" as the seal popped loose. I took a breath, and gagged on the sudden odor.

The smell was as if I'd been wading through a cesspool in the middle of a very rotten garbage dump. I looked down. My shoes were covered in brown. My hands were brown. One leg, where I'd knelt on the ground, had a brown spot on the knee. Leah was even dirtier.

Shit.

Tally popped through the lock, accompanied by a fresh burst of fecal odor. I held my nose and suppressed my instinct to gag.

"Of course," said Leah. "Anaerobic bacteria." She thought for a second. "We're going to have to find some boots, and maybe overalls. Leave them outside when we come in."

I started to giggle.

"What's so goddam funny?" Tally said.

"I've decided you're right," I told her. "Mars stinks. Take off your rebreather. You'll see."

THE UTILITY LANDING PLATFORM WAS A HEXAGONAL TRUSS PLATE with small rocket engines mounted on three of the six corners. The hab-and-lab module that Spacewatch was delivering for our stay was strapped on the top. It hovered in the cloudy sky like a flying waffle iron. Langerin guided it in by remote control, setting it down in the sandy valley a hundred meters from the ruins of the earlier habitat.

The bodies were barely more dirt. With a rib-cage and part of a

His landing was as neat and as unconcerned as a man passing a plate of potatoes. Still operating by remote control, he unstowed the power crane, lifted the habitat off of the landing platform and lowered it gently to the ground. The habitat itself was an unpainted aluminum cylinder, fixed with brackets onto a platform with an electro-mechanical jack at each corner to level it on uneven ground. It was a small dwelling for three people, but would be adequate for our stay.

"Man, I don't envy y'all," he said. He delicately pinched two fingers over his nose. "No surprise nobody comes here." He shook his head. "Anything else y'all need?"

"How about the rover?" Leah asked.

"It's still in transit from the Moon; won't arrive for a few more days. When it gets here, I'll send it right down."

TALLY WAS FIRST ONE INSIDE THE HABITAT, OF COURSE. EVEN though it had just come down from space, like a cat, she had to sniff it out herself. After five minutes she waved us in.

The interior of the habitat was brand new, the fixtures molded to the interior. Across from the airlock atrium was the air regeneration equipment, with three spherical pressure tanks painted blue to indicate oxygen, and three green-painted tanks of nitrogen to provide make-up gas. To the left was a combined conference room and kitchen area, and behind that the sleeping cubbies.

"Only two cubbies," Tally said, "and a mile cozy ones at that. Guess we girls bunk down in one; give you the other all to yourself, Tinkerman."

I couldn't breathe for a moment. Somehow I managed to sneak a quick glance up. Tally wasn't looking at me. She hadn't yet realized that the silence was extending a bit too long. Leah glanced across at me. Her expression was neutral, curious, perhaps, as to what I would do. I couldn't read her intention. I never could.

In a very small voice, I said, "I volunteer to share a bunk with Leah." Tally looked up sharply. Leah gazed back at her, her expression unreadable. But she didn't voice an objection.

"Huh," said Tally. I don't think I'd ever seen Tally at a loss for words. "Well, Guess I got a cubby to myself." She paused, and then added, almost to herself, "Lucky me."

TERRAFORMED MARS HAD AN ATMOSPHERE HALF AS THICK AS Earth's. That was enough pressure for a human to survive, but with no oxygen to breathe. With rebreathers to recirculate exhaust carbon dioxide back into breathable oxygen, we could survive outside comfortably without a vacuum suit. For that matter, you could survive outside stark naked, as long as you had your rebreather, and didn't mind the cold.

Outside again, this time with boots and coveralls to keep the worst of the stinking dirt out of our habitat, we walked in silence across the

rock-littered landscape the hundred meters to the place that the earlier habitat had been. Ragged edges of aluminum stuck out from the platform like ribs. Pieces of the habitat had been scattered across the plain by the wind, a fan-tail of shining metal and shards of composite sheeting visible against the brown all the way to the horizon.

There were two bodies, one within the remains of the exploded habitat, one out on the plain. Not much was left of them. The bodies were barely more than piles of dirt with a rib cage and part of a pelvis protruding, even the bones covered with the purple-brown of the Martian microbiota. I was glad for the filtering effect of the rebreather. I made videos of the bodies in position while Leah knelt down to examine them and take samples: clothing, hair, skin, tissue. After she examined the one in the habitat, she rose without speaking and went to the one outside. Unlike the other one, the clothing on this one was partly eaten away by bacteria.

Leah's long black hair blew around her face as she worked, but the carbon-dioxide breeze wasn't strong enough to move the pieces of aluminum framework. The wind must have been much stronger to have spread the wreckage so far.

Tally stood, as always, a dozen paces away, eyes restlessly scanning the horizon for enemies.

"We really should have had a doctor to do this analysis," Leah said, standing up. "But a few things are obvious. For example, the man in the habitat had a fractured skull."

"What?"

"But this one," she nodded down at the body she was standing over, "shows no apparent sign of trauma. No rebreather, either, so I'll hazard a guess that carbon dioxide poisoning was what did for him." Leah put the tissue samples into her sample pack and took a step toward the habitat. "I'll have to let the computer analyze the samples to verify that, of course." She looked around. "Who could have killed them? Why?" She looked up the plain, following the trail of debris. "I think we've seen enough. Tinkerman, you have enough pictures? Does your checklist have anything else?"

I looked down at the list. "No, as far as forensics is concerned, we're done."

"Then, unless you have any further suggestions, do you think maybe we could get them decently buried?"

When there's a fatal incident in space, of whatever kind, there needs to be an investigation. If it was an accident, the cause has to be found so that Spacewatch Authority can take appropriate measures to prevent its recurrence, and deliver warning to anybody else with similar equipment.

We were that incident investigation team, Leah and I. Tally, a free-lance survival specialist, was our protection. If somebody had killed the two researchers, deliberately blown up their habitat for some as-yet undetermined motive, whoever it was that had killed them might

were out of sight over the horizon. The biggest mountain in the solar system — but the slope so gentle that it meant nothing on any human scale. Ancient fossil bacteria — but not even a hint of anything that hadn't been dead and turned to rock a billion years before trilobites crawled the oceans. A hundred spots on Earth and across the solar system were more spectacular. Once somebody had climbed Olympus (and in the low gravity of Mars it wasn't a hard climb), and had placed flags at both poles of Mars, why go back?

The ecopoiesis of Mars was done by a band of malcontents from one of the very first space settlements, *Freshhold Together, Habitats* — they called them "space colonies" back then — were crowded, dangerous, undersupplied, constantly in need of repair, and smelly. They were haven to malcontents, ideologues, fanatics, and visionaries: the vanguard of humanity, the divine agents of the manifest destiny of mankind into the universe. More succinctly, the habitats were home to people who couldn't get along with their fellow humans on Earth. Arguments were their way of life.

It was an engineer named Joseph Smith Kirkpatrick who proposed that *Together* could transform Mars. The people of *Together* debated the question for a year, arguing every conceivable point of view with a riotous enthusiasm. At the beginning, the consensus of the colony seemed to be that since human destiny was in space, even to consider living on planetary surfaces could only be idiocy, or some deviant plot to subvert that destiny. But Kirkpatrick was more than just a maverick engineer with wild dreams, he was a man with a divine mission. A year later, the quibble about living on a planetary surface wasn't even part of the argument. *Together* decided that the right of Mars to remain unchanged was preempted by the imperative of life to spread into new niches. They had convinced themselves that they had not merely a right, but a divine duty to seed life on Mars.

Mars, back then, was completely inhospitable to life. The atmosphere was less than one percent of the Earth's, and the average temperature was far below freezing, even at the equator. But their analysis showed that the climate of Mars just might be unstable. The surface of Mars showed networks of canyons and run-off channels, dry lakes and the shorelines of ancient oceans. There had been water on Mars, once, a billion years or more ago, and plenty of it. All that water was still there, hidden away. The old scientific expeditions had proven that — frozen in the polar ice-caps, locked into kilometer-thick hills of permafrost in the highlands. They convinced themselves that there was, in fact, far more water on Mars than previously suspected, frozen into enormous buried glaciers under featureless fields of sand. Enough to form whole oceans — if it could be melted. All that was needed was a trigger.

It's not easy to heat up a planet, even temporarily. They did it by setting off a volcano. There were a number of ancient volcanoes on Mars to choose from; after many geological soundings to determine magma depth, they picked a small one. Or rather, a volcano small by Mars standards, still a monster by the standards of any Earthly mountains. Hecates Tholus, the Witch's Tent. To set it off, they determined, required that they drill five kilometers deep into the crust of Mars.

Just because it was clearly impossible with no reason they wouldn't do it. Mars has no magnetic field, and so the solar wind impacts directly on the planetary exosphere. A thousand miles above Mars, currents of a billion amperes course around the planet, driven by the solar wind-derived ionization. Joseph Smith Kirkpatrick and his team of planetary engineers short-circuited this current with a laser beam, ionizing a discharge channel through the atmosphere, creating the solar system's largest lightning bolt. They discharged the ionosphere of Mars into the side of Hecate, instantly creating a water-deep pool of molten rock. And then they did it again. And again, as soon as the ionospheric charge had a chance to renew. And again, a new lightning bolt every five minutes, day and night, for ten years.

One million lightning discharges, all on exactly on the same spot. They melted a channel through to the magma chamber below, and a volcano that had been sleeping for almost half a billion years awakened in a cataclysmic explosion. The eruption put carbon dioxide and sulfur dioxide into the atmosphere; more importantly, it shot a han-

than piles of
pelvis protruding...

come back.

But nobody cared about Mars. The exciting horizons were light-years away, where relativistic probes lasercast back terabits of images, giving the excitement of vistas that anybody could access on optical disk without the danger and discomfort of leaving Earth, and with far stranger life forms than any mere microbes. Mars was such an uninteresting location that it took over a year before Spacewatch Authority noticed that a scientific team that had gone there to study microbes hadn't returned. They were the first researchers to bother with an on-site investigation of Mars in over a century.

"It doesn't make sense," I told Leah, back in the habitat. "Why would anybody want to murder two researchers on a stinky planet too close to Earth to even be interesting?"

She shrugged. "Kooks. Bacteria-worshippers. Or, maybe one of 'em had an angry ex."

"It's not as if the planet were exciting," I said. "They tried to terraform it. They failed. End of story, go home."

"Failed? Thinkerman, you have it all wrong. You should go learn a little history before going on a trip." I could hear her switching into lecture mode. "They didn't try to terraform Mars. They *never* tried to terraform Mars. What they did was ecopoiesis, and they succeeded spectacularly, more than anybody had a right to expect."

"Ecopoiesis," I said, "terraforming, same thing."
"Not at all."

THE WAY LEAH TOLD IT, IT WAS PART EPIC, PART FAIRE. It's hard for us, now, to imagine what it was like in the Age of Confusion, before the fusion renaissance and the second reformation, but the people of the twenty-first century had a technology of chemical rockets and nuclear reactors that, although primitive, had its own crude power. By the middle of the twenty-first century, Mars had been explored, cataloged, and abandoned. It was too cold to harbor life, even of the most primitive sort; the atmosphere was closer to vacuum than to air, and there were far more accessible resources in the asteroids. Mars was uninteresting.

It didn't even make good video. The largest canyon in the solar system — so big that if you stand in the middle, the walls on both sides

dred billion tons of ash directly into the stratosphere. Over the course of several months, the ash settled down, blackening the surface.

The new, darker surface absorbed sunlight, warming the planet and releasing adsorbed carbon dioxide from the soil. The released carbon dioxide thickened the atmosphere, and the greenhouse effect of the thicker atmosphere warmed the planet yet more. The resulting heat evaporated water from the polar ice caps into the atmosphere. Water in the atmosphere is an effective greenhouse gas, even more effective than carbon dioxide, and so the temperature rose a little more. Finally ice trapped underground for eons melted. A whole hemisphere of Mars was flooded, eventually to form the vast Borealis Ocean, as well as innumerable crater seas and ponds. But that was much later. In the beginning, in Joseph Smith Kirkpatrick's lifetime, only on a band around the equator was water actually liquid all year round. But that was enough for what they wanted to do. Slowly, the eons-frozen permafrost of Mars was melting.

The atmosphere was still thin, and still almost entirely carbon dioxide, but Mars is a sulfur-rich planet. Sulfur dioxide frozen into the soil was also released, and rose into the atmosphere. Ultraviolet light from the sun photolyzed the sulfur dioxide into free radicals, which recombined to form sulfuric acid, which instantly dissolved into the new equatorial oceans. The new acid oceans attacked the ancient rocks of Mars, etching away calcium carbonate and magnesium carbonate, releasing carbon dioxide. In a few years, the acid oceans had been once more neutralized — and the atmosphere was thick, fully half a bar of carbon dioxide, enough for a greenhouse effect warm enough to keep the new oceans liquid year round.

Mars had been triggered.

But how to keep this new atmosphere, to keep the planet warm? Not even Joseph Smith Kirkpatrick could keep a volcano erupting forever, and already the Witch's Tent was settling down from an untamed explosion of ash to a sedate mound of slowly oozing lava.

Joseph Smith Kirkpatrick's answer was bacteria. Anaerobic bacteria, to live in the oxygen-free atmosphere of Mars.

"Sewer bacteria," I said.

"You got it, Tinkerman. Anaerobic bacteria — modified sewer organisms. Yeasts, slime-molds, cyanobacteria, methanogens and halophiles as well; but all in all, bacteria closer to gangrene than to higher life."

"No wonder it stinks," I shuddered. "They were crazy."

"Not so. They were, in fact, very clever. They engineered a whole anaerobic ecology. The bacterial ecology darkened the surface, taking over the job of volcanic ash. It burrowed into the rocks and broke them apart into soil, releasing adsorbed carbon dioxide in the process. The methanogens added methane, a vitally important greenhouse gas, to that atmosphere, and raised the temperature another few degrees. They didn't dare establish too many photosynthetic forms, of course, because if the carbon dioxide in the atmosphere were to be converted into oxygen, the greenhouse effect that kept the planet warm would vanish, and the planet would return to its lifeless, frozen state."

"But terraforming Mars hadn't been their goal in the first place; in fact, terraforming was the very antithesis of what they intended. Their goal was ecopolesis, the establishment of an ecology. They were Darwinists, and diversity was their creed. They looked down in contempt on unimaginative humans who believed that humans were the pinnacle of creation; they saw humanity as only agents of life, sporepods by which life could jump from one world to another. They believed that once life, however primitive, could establish a toehold on Mars, it would adapt to its environment, and flourish, and someday evolve. Not to make a copy of Earth, but into something new, something indigenously Martian."

"So they wanted to be gods."

Leah shook her head. "They wanted to be men."

"So they're responsible for this place. Great."

"The ecopolesis was a wonder in its day, Tinkerman. It spawned debate across the Earth and cis-lunar space: was this the greatest feat of engineering in history, or was it a crime against nature? The year of arguing at *Freehold Tynbee* was nothing compared to the

cyclonic fervor that was released when Joseph Smith Kirkpatrick proudly announced to the Earth what they had done.

"Kirkpatrick was kidnapped from *Tynbee* and put on trial in Geneva as an eco-criminal. The question the High Court argued was, Do Rocks Have Rights? Can it be a crime to destroy an ecosystem that contains no life? The trial took three years, and ended in a hung jury. Kirkpatrick was eventually acquitted of all charges, but he was never allowed to leave the Earth again, and died an angry, bitter man."

"*Freehold Tynbee* claimed ownership of Mars, and passed a law making it illegal for any human to land on it for the next billion years — but nobody paid any attention to their claim. For decades, Mars was the subject of intense scientific scrutiny. In a few more years *Tynbee* went bankrupt, for ecopolesis paid no bills. Technologically obsolete, the colony itself was ripped apart for scrap; the colonists scattering to a hundred colonies and asteroid settlements. And then, after a few decades of fume, Mars was ignored. Bacteria or no bacteria, there were far more abundant resources elsewhere in the solar system."

"And if two researchers hadn't decided to die here, it would still be uninteresting today."

"Not uninteresting, no. Ignored, maybe. But not uninteresting."

"To you."

Leah smiled. "To me."



ANGEVIN TOOK THE LANDER BACK UPSTAIRS, flying the utility platform in formation with him, leaving us alone on the planet. We were in the tiny kitchen area of the habitat, sitting around the only table large enough to serve as a conference area. Leah spoke first. "Tally, did you learn anything?"

"After almost two years," Tally said, "did you really seriously believe any footprints of the perps would be left preserved? Well, surprise." She grinned. "Yeah, I found some boot prints. Took me some looking, let me tell you, but I found 'em."

"So tell," Leah said. "What did you get?"

"A few places in the lee of the rocks didn't get washed away by rain or blurred by wind." Tally shook her head. "But I checked them all; every damn print matches the size and patterns of one of the boots in the hab. Either whoever did it used the same boots as our late friends, or, more likely, whoever did it didn't leave any boot prints. That's all I've got. You?"

Leah spoke slowly. "The one in the hab died from being hit in the head. The other one died outside. No re-breather in evidence, and he wasn't dressed for outside. Just a thin robe. Carbon dioxide poisoning, as I expected."

"Hm," said Tally. "Two guys sleeping in the same cubby. Ask me, I'd call it a lover's quarrel gone violent. The one guy bash(es) the other in a fit of rage, probably didn't mean to hit quite so hard. Then, realizing what he did, he blows up the habitat and walks outside to die."

"Could be," Leah said. "It's a hypothesis, anyway. Can't prove it one way or another with the evidence we have so far. One odd thing, the man who died outside had charred clothing."

That explained the ragged appearance of the clothing of the man who had been outside. His clothes hadn't been eaten by bacteria; they had been charred.

"Maybe caught alight when he blew the habitat?" Tally suggested. Leah shook her head. "Carbon dioxide and methane atmosphere. Nothing burns, outside."

"Um," Tally said. "Guess I don't have an explanation for that one."

"Tinkerman?" Leah said. "You get anything?"

I shook my head. "I collected as much of their records as I could find, but so far I can't read them. A lot of their opticals were damaged by fire, and on the ones that weren't, the surfaces are pretty corroded by exposure. I've started cleaning them off, and I may be able to get at some of their records, but, even if I can do it, reading it will be pretty much a bit by bit process. They weren't very conscientious at making backups and putting them in a secure location, I'm afraid."

"Pity. If we could read their diaries, it would help, let us see if anything was going wrong before the blow-up. Oh, well. Do what you can, and we'll get together again tomorrow and check progress."

As we talked, Leah's face had slowly been reddening. Her eyes were pale circles; her nose and lips and chin, where the rebreather had covered them, apale diamond. The rest of her face slowly turned a brilliant scarlet, deepening even as I watched. She raised a hand and brushed her hair away from her face. "Ouch." She looked puzzled.

Reflexively, I raised a hand to my temple. My own touch was like a whip, a brilliant stab of heat.

Tally looked at the two of us, grinning. "Well, well, aren't you two the sight. Look like you're wearing warpaint. Painted up like two oaks, you are."

Tally's dark skin showed nothing, but Leah reached over and gently touched her face.

"Yow! Hey, that hurts! Shit!"

"Ultraviolet," Leah said. "It's the hard ultraviolet. CO₂ is too difficult for UV to split; it doesn't form an ozone layer. The climate is cloudy and cold, but the hard UVs still get right down to the surface. I'd say, we've been a bit stupid, going out unprotected. Good thing we weren't out much longer."

"Shit," said Tally. "Why didn't you say something sooner?"

"The hab has to have some kind of a med kit," Leah said. "Maybe we'd better see if it has any sanburn ointment."

AT NIGHT, IN THE CUBBY, I DIDN'T KNOW WHAT to expect.

She wasn't in the bunk. She was sitting in the cubby's one small chair, staring into space. I got into the bunk, on one side, making a space for her.

She didn't move. Fifteen minutes. Half an hour.

I'd done something wrong. But she hadn't objected! I thought —

Damn.

The silence in the cubby was oppressive.

At last I said, "Leah?"

She said nothing.

"Leah, I'm sorry. I didn't mean to try to —"

In the dark it was hard to tell where her eyes focused, but I could see the slight movement of her head and knew that she was looking at me.

"David." She paused for a moment, and just before I was about to speak again, to apologize to her, she continued, "I've seen bodies before."

It was not what I'd expected her to say. "Bodies?"

"I thought I was used to it." Her voice was tiny in the darkness. "I thought I could handle it. I can handle it."

It was odd. The bodies hadn't bothered me. They had been so far decomposed that they were barely recognizable as having been human at all. And they hadn't seemed to bother her, not in the daytime.

"I've seen too many bodies." And then she came into bed, turning to face away from me. I held her. Her body was rigid, but she turned her face and pressed her head into my side. "Too many, too many." Her breath was warm against my shoulder. "It wasn't even anybody I knew. I'm sorry. I'm sorry. I'm going to stop crying now."

I touched her face. Her eyes were dry, but somewhere inside she seemed to be crying.

"I don't even know why I'm still alive," she said. "Everybody else died."

"I didn't know what to say to her, so I stroked her hair and said, 'I know, I know.'"

"Careful how you touch me, you idiot," she said, and her tone was back to normal. "My whole face feels like it's on fire."

I knew so little about her. She never talked about herself; she so deftly managed to always avoid the subject. She had always seemed so much in control. But suddenly she was asleep, and the time for asking questions had passed.

I'VE HEARD THAT SOME PEOPLE FALL IN LOVE AT FIRST SIGHT. It took me about three classes.

The first one, I don't think I even noticed her in particular, just another face among the many. I was teaching a class on troubleshooting. There are two techniques to troubleshooting equipment. The first is, you know the equipment so thoroughly that you have a sense of it, you know it as a friend, and when it's down, you can feel what's wrong by pure instinct. That method is rather hard to teach.

The other way is to be simple, thorough and logical; to home in on the problem by pure mechanical elimination, a matter of dogged and willfully unimaginative technique. That was the technique I was teaching. It means teaching how to be methodical, how to structure a grid to let no combination of symptoms escape detection.

The Institute has simple rules: everybody teaches, everybody learns. Every year, during the Earth's northern-hemisphere summer, the Institute holds a month-long convocation, and this year I was teaching. My class lasted only a week, and it was almost half over before I really noticed Leah.

But, once I'd noticed her, I couldn't get her out of my mind. The breeze rustled across pine needles, and I heard the sound of her voice, asking a question, precise, cogent, perfectly phrased. I'd see the way she cocked her head, listening. I became suddenly self-conscious, worried about how I presented the material, whether it was clear and precise.

So, when I finished, I sat in on her course, although it was somewhat out of my usual feeding range. Soliton-wave solutions of the Einstein field equations. I'm slow; my lips move when I solve field equations in four dimensions. She was a lot faster than the class, so smooth that it was obvious that she knew the material so well she didn't even bother to review it before she started talking.

I knew that once the convocation had ended, I would never see her again. The thought made me desperate, although I'd not spoken more than a half dozen words to her beyond what was required of a student. I knew absolutely nothing of her other than her name, Leah Hamakawa, and the obvious fact that she knew more about general relativity than I would be able to learn in a lifetime. I had to do something that would get her attention.

I invited her to come with me to visit old Los Angeles.

The month after the convocation is traditionally a time for vacation and independent study, before we went back to our individual lives, hiring out as Institute-bonded technicians or consultants or troubleshooters. I had no idea whether she'd be interested in a trip to OLA; it was a wild shot to try to impress her.

But her eyes had suddenly flared with interest, and, for the first time, she looked at me and actually saw me. "Old LA? Interesting. Have you been there?"

I didn't want to admit that I hadn't, so I temporized. "I know a good guide."

OLA was one of the most dangerous, and certainly the oddest, of the ecosystems on the Earth. Back at the end of the second Elizabethan age, the doomed city had been the home of a dozen or more gene-splicing laboratories, corporations that had made synthetic retroviruses to replace flawed DNA with custom-designed synthetic, right inside the chromosome of the target organism. Other cities had such labs, too, of course, and Los Angeles hadn't even been the most prominent of them. Just the unluckiest.

The virus that had gotten free was a generic gene-splicer. It would copy snippets of genes at random out of any host organism it happened to infect. As soon as it vectored to another host, it would make a billion copies of itself, and of its copied DNA, copy the genes back into a likely spot in the genome of the new host, and then start over again from the beginning by grabbing a snippet of DNA from the new host. As a parting gift to the new organism, it would then trigger the cell's own enzyme promoters to express the DNA.

The fact that retroviruses copy DNA from one organism to another

is a natural process, of course, just a part of the mechanics of evolution. The rogue virus had the effect of a million years of evolution, set loose in a single day: chaos.

Most of the additions to the genome were meaningless changes, genes which coded neither useful nor harmful proteins. Most of the changes that had effect were dysfunctional, and killed the hosts over the course of a few days or weeks, if they were lucky, or produced

other pieces in the distance. Aerial photos taken as we had landed helped locate the more distant fragments, but didn't substitute for plain, dogged walking.

The job took a lot of walking. The camp was located on the Syrtis isthmus. This was a broad saddle that separated the Hellenian Sea from Gulf of Idisia, a bay of the Boreali Ocean which covered nearly the entire northern hemisphere of Mars. To the

One million lightning discharges, the same spot. They melted a channel

an explosion of cancers that killed the host over the course of months, if not so lucky. Over the course of the first year a great die-off occurred.

The things that survived were — strange. The rogue virus had indiscriminately cut and pasted genes with no notion of species; what came out of the mingling were neither humans nor animals nor plants, but weird mixtures: predatory plants, octopuses with hands, tiger-sized raccoons that knew how to use guns, social bacteria that drew recondite, hypnotic patterns across deserted beaches. The thrown-together quarantine barriers held, barely, and the hastily mobilized scientific effort to combat the virus devised a specific antiviral protein that knocked out the rogue virus's ability to reproduce. The plague was stopped before it spread outside the boundaries of what had been Los Angeles.

Inside the hundred-mile ring, surrounded by scorched sand and silent, instant death, what had once been Los Angeles was still evolving toward a new ecosystem. There was no place more deadly, or more strange. The retrovirus itself was gone, but the creatures it had spawned remained. You could go there, if you signed a waiver indicating that you knew the danger and were aware that there was no guarantee that you would come back.

The guide I had been told about was a mysterious survival specialist and weapons expert named Tally Okumba. Nobody, I was told, knew more about OLA, or about any of the odd, dangerous corners of the Earth, than Tally did; and nobody knew more about staying alive, on Earth or elsewhere.

"Old LA," Leah said. Her eyes were veiled, dreaming. "When do we leave?"

IN THE LIGHT OF THE DAWN, TALLY WAS DANCING, HIGH KICKS, spins and backflips in the low gravity. Over her rebreather, her face was covered with a bone-white warpaint that, after a moment, I realized was an improvised sun-block. I watched her through the habitat's window, and wondered how long she had been at it. Her flexibility was astonishing.

Leah did not mention what she'd said the night before, and I didn't bring it up.

The task for the day was to gather up shards of the shattered habitat and as much of the wind-scattered contents as we could find. Leah and I worked mostly in silence, occasionally pointing out to each

northwest the land sloped gently upward toward the Syrtis caldera, an ancient shield volcano, dead now for well over a billion years. An endless series of lava-etched rilles corrugated the landscape from northwest to southeast, each with a tiny brown stream at the bottom. The wind that scattered the pieces of the habitat had, in accord with Murphy's law, been crosswise to the rilles, meaning that we had to trek up and down innumerable gullies to collect the fragments.

"It must have been some wind," Leah said. "Blowing pretty constantly from the Hellenian Sea toward the Gulf, apparently."

The carbon dioxide atmosphere was still now, with barely a trace of breeze.

By local noon we had made a large collection of pieces. I took a break and sat on a rock by one of the streams. The brook foamed as it rippled over submerged rocks. Amber bubbles clumped together, then detached and floated downstream. The stream looked like an alcoholic's vision of paradise: a river of ice-cold beer, flowing down into a lake of beer, emptying somewhere into a frigid ocean of beer —

"Well, yes — what did you think that the rivers are?" Leah said, when I mentioned the thought to her. She was wearing a makeshift sunbonnet constructed from piloting charts; even with her face hidden by a rebreather and caked with burn ointment, she was stunningly beautiful. I wondered what it would be like to peel off her winter garments, to make love to her right there by the stream. "By any practical definition, it is a river of beer. Yeast is an anaerobic microorganism — the stuff that the ecopoiesis team seeded this planet with will ferment just about everything. Naturally carbonated, plus five hundred millibars of carbon dioxide atmosphere is going to dissolve a hell of a lot of carbonation into the water at this temperature. I bet that if you brought a glass of that stuff inside it would develop a pretty good head."

"You mean I could drink this stuff?"

Leah looked at it critically. "Hmmm. You know, you just might be able to. Full of bacteria, I expect, but if our anti-biologicals aren't working, we're already dead anyway, so I doubt it's a problem. Tell you what." She looked up at me. "You try it, and let me know."

I didn't.

By midafternoon, we had gathered as much of the debris as we could find. Everything that looked like it might have originally been

part of the habitat pressure vessel, Leah set out in a array next to the site of the explosion. Each piece was numbered, and then Leah began fitting them together like a jigsaw puzzle.

"There are some minor pieces missing, but I think we've pretty much got everything important," she said at last.

I walked up behind her and looked at the neatly-indexed array of scrap. "What have you learned?"

all on exactly
to the magma..

She shook her head. "It doesn't tell me a story, yet." She picked up a piece and handed it to me. "Tell me what you think about this one."

It was a curved piece of aluminum, forty centimeters long, somewhat bent. "Exterior habitat pressure-vessel wall," I said.

"Right so far. What else?"

The piece had broken at a seam at one edge. Shoddy workmanship? Probably not; the other end had ripped jagged right across; the weld had probably never been designed for the stress it must have taken. It was bent in the middle. The jagged end had a scrape of paint on the raw metal. "Blue paint chips on the end here," I said.

"Right," she said. "And the bend?"

It took me a moment, but suddenly I saw it. "Bent the wrong way," I said. "It bowed in. The explosion should have blown it out." I thought for a moment. "Could have been bent by the wind, later."

She nodded, thoughtful. "Possibility. There are other pieces bent the same way, though."

"How much overpressure would it take to bend it that way?"

"Good question," she said. "If we could figure the overpressure as a function of position, we can guess the locus of the blast. Turns out, though, that it doesn't take much blast pressure to make the habitat structure fail this way. The pressure vessel was designed to hold an internal pressure; it's not well designed against an external overpressure."

"So, what do you think?"

"It might have failed in the rarefaction rebound following the overpressure of an explosion," she said. "Microstructural examination might tell. Might not."

"Or the explosion was outside the habitat." That would make sense. If somebody had wanted to kill the team, the easiest way to do it would have been to put a bomb next to the shelter.

Leah shook her head and chose another piece to hand to me another. "Carbon deposits," she said.

I looked at it and nodded. The burn marks were on the concave side, the interior. "Fire after the blast?" I suggested.

She nodded, but slowly. "Could be, I suppose. But after the habitat breach, everything vents to the reducing atmosphere. Fire goes out pretty quick."

"If it was murder," Leah said, "who might have done it?"

We were sitting back in the little conference room. My whole face

itched now, despite the ointments that Tally had devised for sunburn. My face felt like I was still wearing the rebreather.

"Hard to say," Tally said. "I suppose either one of 'em might have had enemies. If it wasn't personal, I've got a few possibilities. First, before they went, turns out they got a couple of anonymous messages saying not to go. The point was, Mars was property of *Freehold Tynbee*, and it was reserved for the Martians, however long it took them to appear. Humans were expressly forbidden to land."

"Tynbee?" Leah said. "They were dissolved more than a century ago. Bankrupt and sold for scrap. Besides, lots of researchers have visited Mars."

Tally nodded, slowly. "A century ago, yes. I doubt anybody been here in the last hundred years, though, except our poor friends. Seems hard to believe anyone would still care. A nut, I'd say. Still, a nut might be what we're looking for."

"And the other possibilities?"

"Turns out that there are still some people," Tally said, "who think that ecopoleis is usurping the role of God. And some who think that ecopoleis is, or was, a crime against the ecosystem. And there's been talk that if Mars could be triggered, then other planets, in other solar systems, could be. Some of these have life of their own, incompatible with terrestrial life. So, some radicals, they don't want Mars studied. They're scared that any studying of Mars is a step to triggering planets in other solar systems. There are those who would like to stop that. Stop it early, and stop it at any cost."

"And, finally, there are those who worry about Mars, worry that this ecopoleis might just be another LA waiting to happen." She shrugged. "Me, I rather like old LA. Got that kind of raw charm you don't see much in other cities nowadays. But I know that not everybody thinks like me."

"I see," said Leah. "And which of these would have set a bomb?"

Tally shrugged. "Any of them. Or all of them, working together."

"Working together? Logically, the Tynbees and the eco-radicals are enemies."

Tally smiled. "Logically, we're not precisely talking rational people here."

"So what do we have?"

"See, are we even sure it was a bomb?" Tally said. "Tinkerman, you find any suspicious pieces of pyrotechnic?"

I shook my head. "Nothing yet. But I don't know much about bombs. I might have missed something."

"Me neither," Tally said. "And I do know about bombs, I do. A bit."

LEAH HAMAKAWA WAS COMPLETELY OPAQUE TO ME. I NEVER had a clue what she was thinking, what she felt or thought about me. Sometimes her gaze would wander over me and stop, and she would look at me, not with a question, not with an invitation, just a look, calm and direct. I wished I knew what she was contemplating.

I wished I knew why I was so attracted to her.

The trip to Old LA had been a cusp in our relationship. On the trip we had just been fellows, co-adventurers and nothing more. Afterward, Leah accepted the fact that I tagged along after her as just a facet of the environment, hardly worth commenting on. We're not, actually, a team, although it must seem like it to others. Leah was the hottest scientist, and, well, every team needs a tech and a pilot.

Eventually she had noticed.

"Look," Leah had said. "You're as skittery as a colt, you're stammering, I can't get one full grammatical sentence out of you in a cartload, and you're so nervous I'm sure you're going to break something. Do you want to sleep with me? Is that it?"

Her gaze was direct. It was always direct.

I couldn't say anything. I had trouble closing my mouth.

"If you do," she said, "fine, do it, or don't do it, I don't care, just will you quit stammering around."

And, later, after she'd taken off her clothes, she said, "Just don't think it means something, okay? I couldn't stand that."

But it did. Maybe not to her, but to me.

And so we came to Mars. When the authorities had finally noticed

that the missing science team had stopped filing status reports to Spacewatch, and the orbital eye they sent to report got a break in the heavy Martian cloud cover and saw pieces of the habitat spread across ten kilometers of landscape — a “presumed fatal malfunction,” as it was reported, Spacewatch had asked for Leah; she had a rep for unraveling tough balls of fur, and I scrambled to rate the slot to go along. Not that this was so hard; I had my skills, piloting and mechanics and, yes, troubleshooting, and most crews were glad to have me aboard. In this investigation, the third slot on the team was special, in case the accident we were investigating was no accident at all, and the perpetrators might not be finished. The third slot needed a professional paranoid.

We both knew exactly the survival expert who was right for that place.

“Still hanging ‘round with that long-legged white girl, I see,” Tally had greeted me, when I came to ask if she wanted to join the team. “Give it up, boy, she’s too good for you.”

“Don’t I know it,” I’d said.

But that was the past, and brooding over the past wasn’t going to get me to bed, or explain Leah Hamakawa to me. She had undressed without the least trace of self-consciousness and gotten into the cubby’s tiny bed. I undressed, with a lot more trepidation, and lay down beside her. She turned and watched me with a pellucid gaze, free of any emotion I could interpret. She wouldn’t let me understand her, but for whatever reason of her own, she would let me love her.

For the moment, that would have to be enough.

THE NEXT DAY I WORKED ON DECODING THE DATA FROM THE damaged opticals, while Leah put together the jigsaw puzzle of the exploded habitat pieces, and Tally ranged in over wider loops from the habitat, exploring. I succeeded in getting large blocks of data, but nothing was of any evident value: lengthy descriptions of bacteria, lists of bacteria count per square millimeter in a hundred different habitats.

“Here’s something,” Leah said. “Take a look at my collection of

metals. But, no steel in the pieces here. And, take a look here.” She chose a piece out of the pile and handed it to me. It was a damaged recording unit. The capstan flopped loose in the absence of the steel axle it should have rotated on. She handed me another, a piece with a neat hole where a steel grommet should have fit.

“Does that mean anything?”

She shrugged. “Who can tell? Probably not.”

“Any steel fixtures hold pressure?”

Leah shook her head. “I checked the plans. No, all the iron and steel parts are incidentals. No steel penetration of the pressure hull.”

Tally came back from her scouting, and looked at us both. “You are working too hard,” she said. “It’s time for a break. Way past time, you ask me. And I know just the thing.”

“What do you have in mind?” I asked.

“Here.” She handed me a sheet of aluminum. It was about a meter long, slightly curved, one side coated with a carbon composite facing. In a corner “117 Outer” was written in Leah’s neat printing. A panel from the outer skin of the exploded habitat. A mounting flange with a hole for bolting interior fixtures was at one end. She handed another one to Leah. “Sure you don’t need these panels, now?” she asked Leah.

“Already looked at them,” Leah shook her head. “That was the side opposite the explosion. Nothing but junk, now.”

After we had suited up for outside and smeared one another’s faces white with sunblock, we each took a panel, and Tally led us up to the top of the ridge that rose above the habitat. The hill surface was composed of sand held in place with a thin veneer of purple-brown algae, slick as powdered Teflon. We had to choose our footing carefully to avoid skidding back down.

It was a gorgeous day. From the ridge, the marscape appeared striped, brown and purple strips in alternation all the way to the horizon. The purple was the algae, covering the sunnier face of each ridge; the brown anaerobic scum colonizing the shadier back face. The characteristic north-south wind pattern was clearly manifest in the form of long streaks trailing behind each of the larger boulders. Today, though, the wind was once again slight, erratic

“Freehold Toynee claimed making it illegal for any human

pieces. What’s missing?”

I looked over the junk pile. Skin, electronics, window fragments, plastic shards. “What?”

“Don’t you see it? Aluminum, titanium, carbon-composite, plastic — anything missing here?”

Now that she had given the hint, I could see it, too. “Steel. Nothing out of steel, or iron. Is that surprising? Steel’s heavy.” Hardly anything in a space-going technology is made out of steel. In space, every extra gram is paid for over and over again in fuel.

“There’s not a lot of steel on a hab module,” Leah said, “but there is some. Look around our hab, not everything is made of the light

light gusts of no fixed direction.

We reached the top, and Tally smiled. She threaded a lanyard through the bolthole on her aluminum sheet, dropped it on the ground, and put one foot on it. “You might try this sitting down first,” she said. Holding the lanyard in one hand like a set of reins, she pushed off down the hill.

At first she didn’t move very fast. As the sled gathered speed, each bump sent it increasingly higher. Her balance seemed precarious, but in the one-third normal gravity of Mars, she had plenty of time. As she leaned to control the sled, her movements were a slow-motion ballet. We could hear her shout, muffled by her

rebreather, trailing behind her.

"Yahoo!"

I looked at Leah. She looked back at me, then shrugged. She dropped her sled on the ground and pushed it with her toe, testing how well it slid over the scum. Then she sat down on it, grasped the handrail with both hands and pulled it taut, and looked back over her shoulder. "Give me a push," she said.

It took a little more skill than Tally had let on, but after a few spills, we got the hang of it, and organized scumsliding races. Tally on one sled and Leah and me together on another, then Leah and Tally together, then finally all three of us on one sled, Leah and I sitting docked together and Tally standing with her knees gripping my chest from behind.

At a rest break, sitting exhausted from climbing, I said to Tally, "So this means that you think there's no danger? I mean, nobody trying to kill us?"

"Never said that," Tally shook her head. "No, I'm not about to be calling all-clear, not quite yet. But I'm pretty sure that there's no danger right exactly this instant. Not unless these killers are invisible and don't leave footprints." She paused. "And, 'sides," she continued, "this is pretty much the tallest ridge in the area. If they were coming for us, we'd see 'em miles away."

"But what if we did? What could we do? We'd be sitting ducks."

Tally grinned a broad grin. "Sitting ducks, you say? Take a peep at that ridge over there." She pointed.

I looked. Nothing special, no different than any other ridge. "So?"

I had glanced away for only an instant, but suddenly Tally had an omniblaster in her right hand, a knife in her left, and a projectile rifle with an infrared targeting scope resting at her feet. I had no idea how she could have concealed such armament on her.

"How bout you?" she said. "Don't tell me you're naked?"

I was far from naked — the temperature couldn't have been more than a few degrees above freezing — but I wasn't carrying a weapon.

"Didn't I tell you to always wear a gun?" she said. "Dangerous out here. Who knows who might want to shoot you?"

"Carry an omniblaster? No, I don't think you ever told us that."

Ownership of Mars,
to land on it...

"Yes I did. Told you both. Back in OLA." She paused for a second. "Shit. I bet Leah's walking around naked, too." She shook her head. "You two just a bunch of children. I'm surprised you've lived this long. I really am."

"Say, look," said Leah, coming up behind us. "The sun's out."

We both looked up. The sky had been steadily overcast ever since we had landed, but the clouds were breaking up, and between them we had a glimpse of the sun.

"Take a look at that sky!" Tally said. "Isn't that gaudy?" Behind the clouds, the Martian sky was a startling blue, a bright, nearly turquoise shade that I'd never seen on Earth. I couldn't think of a

reason offhand why the sky should be a different color, but, naturally, Leah could.

"Methane," she said, after a second of thought. "After carbon dioxide, methane is the main atmospheric component here. Strongly absorbs red light, so the sky color is a deeper blue than just the Rayleigh scattering would predict."

"Oh," I said.

"Explains why the colors here are so muted," Leah said.

With the sunlight, the wind had picked up as well, a steadily rising wind out of the north. Suddenly the coveralls we had on weren't enough to keep us warm. We ran for the habitat.

THE OVERCAST HAD CLEARED COMPLETELY THE next day. The sky was preternaturally blue, and the wind had become a steady near-gale from the north. Leah and I worked inside. Tally still did her reconnaissance patrol outside, but I think that even she must have spent much of her time huddled in the wind screen of one or another of the boulders. Now we knew what had scattered the pieces of the habitat.

The missing iron, as it turned out, wasn't a mystery at all. Once Leah realized what to look for, she found it easily enough, in the form of grit scattered in with the rest of the habitat pieces.

"It's a sulfur-rich planet," she said. "I should have thought of it. In the year and a half of exposure, everything iron or steel got converted to iron sulfide. It looked just like part of the regolith, so I overlooked it the first time."

"In just a year?" I asked. "Isn't that kinda fast?"

Leah shrugged. "Seems fast to me, too, but don't forget the UV. The surface here is more reactive than we're used to."

I worked on deciphering their electronic records. They hadn't kept personal logs, or perhaps if they had, they were on some optical I hadn't found yet. The opticals I had were mostly data, with occasional notes about where or how the samples were collected. By afternoon I had enough to determine when the last data had been recorded, and could at least put a date to the disaster.

"Sometime on August tenth," I told Leah. "Two years ago."

"Really," Leah said. "That's interesting."

"Interesting?" I said. "Not really. But you asked me for a date."

"No, but it is interesting," Leah said. "Today is June 23rd."

"So?"

"That's Earth reckoning, of course. The Mars year is 687 Earth days long — one year, ten months and a few weeks. So, in Mars reckoning, it's nearly the first anniversary of the disaster. Five days from now, in fact."

"Spooky," I said.

"No, I wouldn't call it spooky," she said. "But it is an odd coincidence."

I marked it on the calendar.

I liked working alone with Leah, with Tally outside on patrol. I didn't exactly resent Tally, but I did sometimes envy her effortless camaraderie with Leah. I welcomed the chance to be alone with her, even though, for the most part, we worked in silence.

"Tinkerina," Leah said.

"Yes?"

"Once you start getting the data you've recovered indexed, do a search on weather for me."

I shrugged. "No problem." I looked at her. "You think it's relevant to the investigation?"

She shook her head. "Just curious."

They had, I discovered, not taken detailed observations of the Martian weather. But occasionally there was a mention of conditions outside. Their own experience mirrored ours. About the same time in the Martian year, the overcast had cleared, and a steady wind had arisen out of the north. The day before the disaster, data had been marked with a note that samples from two sites had been missed; the wind had blown away the stakes marking the site locations.

On another optical I found satellite photos of Mars. I looked at these with interest. The weather clearing we'd seen wasn't local to the Syrtisian saddle; the photos showed the northern hemisphere completely obscured by cloud cover, and then a sudden clearing across the entire hemisphere. The view must have been an infrared falsecolor, since the ocean was white and the land areas, in contrast, looked nearly black. I checked the dates on the photos, and converted them in my head into Martian season. The clearing started at just about the end of northern hemisphere spring.

Leah nodded when I showed her what I'd recovered. She'd already radioed up to ask Langevin for orbital photographs, and he'd confirmed that the clearing of the clouds we'd seen was ubiquitous, starting with breaks in the cloud cover at northern mid-latitudes, then slowly spreading south. "Apparently it's a seasonal thing."

Langevin had also mentioned that the rover had arrived, after a long slow transit from the Moon. Did we still want it? Where should he set it down?

Oh, yes, we still wanted it.



"TIME FOR A VACATION!" TALLY said, when the unpiloted utility lander had dropped the rover off and I had checked out the systems and declared it fully functional. The rover was the same awful shade of yellow-green as the lander had been, a color chosen for maximum contrast against the browns and purples of Mars. It had six webbed wheels mounted on a rocker-bogie suspension that would give it incredible hill-climbing ability; I had little doubt that it would have been able to crawl right over the hub-lab, if an incautious pilot had tested poorly on navigation. I said as much to the team after the brief test drive.

"Are you seriously suggesting that the habitat was crushed by a rover?" Leah said. "No tread marks were found on any of the pieces we found."

"A rover would have left tracks," Tally said. "Even after two years, we'd have seen them."

I shook my head. "No," I said. "I was just giving an example of how robust the suspension is."

"I see."

"So," Tally said. "Time for a trip."

"A trip," Leah said. "Why not? Where did you want to go?"

"Why not go the bench?" Tally said. "Head north. See what a Mars ocean is like."

"Mmm," Leah said. "Not today. I'll still be busy tomorrow, too, I think. Maybe the next day."

"Copacetic," said Tally. "I wouldn't mind a day to do some long-range recon with the rover, anyway. That is, if Tink says it's checked out okay?"

"All systems in perfect shape," I said. "No reason for you not to drive around a bit."

A lot of the work Leah asked me to do seemed to have nothing to do with the investigation of the accident. She was conducting her own investigation. I decided, a scientific investigation of the progress of terraforming — no, ecopoiesis — on Mars. She had me decipher all the data I could out of the opticals; data on bacteria counts and atmosphere, and checked it against the measurements she could make herself. "Cripes, I wish I were a biologist," had become her favorite phrase, muttered as she stared into the screen of a microscope, counting bacteria, but she was clearly happy doing the work,

and I was happy to assist, to do anything that made Leah happy.

More methane in the atmosphere, she said at a break. Some ethane, ethylene, even acetylene. And quite a bit more oxygen than expected.

"Oxygen and methane? Isn't that explosive?"

"No, oxy is still way under one percent; all in all, it's still mostly a reducing atmosphere. The hydrocarbons are all greenhouse gases."

"Gaaa," I said, suddenly realizing what she was getting at.

"Gaaa," she agreed, a soft smile creeping slowly across her face. The bacteria were producing greenhouse gases, warming the planet up. Making it a better abode for life.

I WAS GETTING BORED WITH THE CLAUSTROPHOBIC spaces of the habitat, and the sameness of the landscape, and I was sure that Leah and Tally were as well. We were all looking forward to the jaunt north to the shores of the

Boreal ocean. So I was rather surprised when, at breakfast on the morning designated, Tally shook her head, and said, "It'll be just you two lovebirds. I'm not coming."

I pretended interest in my food. I never could guess how Leah would react. For me, the idea of a trip in the pressurized rover, a thousand kilometers alone with Leah, was as close to heaven as I was likely to ever find.

"Why?" Leah said.

Tally smiled. "A trap."

Despite assiduous searching, Tally had found no evidence whatsoever of sabotage. Anybody else would have said, that means it was an accident. Tally said: that means that they were clever.

We made a great show of our departure, deliberately packing the rover slowly and openly with all the supplies for three people to take an extended trip. Then all three of us got in. From outside, through the bubble canopy, it would be clear that three people were in the piloting compartment, eagerly watching the terrain.

It would be impossible to tell that one of the three was no more than a dummy constructed of spare clothing.

Once aboard, I powered up the rover, and it rose up from its squatting position to its full height above the Martian terrain. I checked all the systems one more time, testing each wheel in turn for forward and reverse power, making skid marks through the brown grit and tossing much across the landscape. The bacteria would not care; they would thrive in one spot quite as well as another.

If somebody had bombed the first habitat, and was clever enough and subtle enough to betray no sign of themselves, they must be flushed out of hiding. They might be complacent enough to try the same trick again, if they were thoroughly convinced that nobody was watching. Tally wanted to give them that chance. Tally wanted to watch them set the bomb.

Systems all functional. I had a wild urge to wave goodbye to Tally, but that would never do. We set off with no ceremony.

FOR HUNDREDS OF KILOMETERS WE LOOKED AT brown rocks, covered with a thin veneer of slime.

The wind got stronger as we drove north toward the ocean. The landscape was monotonous; rocks and rilles and tiny rivers, broken by lakes, each lake in the form of a perfect circle, reflecting the too-blue sky. To our left, the ground sloped gently up toward the ancient volcano whose flanks we were skirting. The actual summit of the volcano was invisible over the horizon. When we crossed the peak of the Syrtis saddle the wind was coming straight at us as well over a hundred kilometers an hour. It was enough to

slow the rover's progress considerably, and at places I almost worried that the wind would pick us up and blow us backwards, but the rover's six huge wheels held traction superbly, and kept us moving.

Once across the pass, the wind dropped a bit, but never let up entirely. It was constant, unwavering from the north.

The rover drove itself, if we let it, with infrared laser-stripers searching out obstacles in front of it and a mapping program in its computer brain that continually compared the view against the inertial navigation and the stored satellite maps, to compute an optimal traverse across the rippled terrain. For most of the first day, Leah and I took turns driving, following the computer's suggested path sometimes, diverting to a different route that looked smoother or more interesting when the whim struck. By the afternoon, the novelty of the drive had slackened, and we let the rover pick its own path.

Languevin had left Mars orbit days earlier, but he had left behind him a little aresynchronous communications relay, so we could have stayed in touch with Tally at the habitat if we had desired to. We kept radio silence, though, by agreement: Tally had said that we should assume that any radio communications we made would be heard by the enemy. The relay had enough power to let us send reports directly to Spacewatch. We transmitted our daily report back, essentially just a "yes, we're alive" verification, and in the report we included a recorded snippet of Tally's voice, to maintain Tally's deception to her hypothesized snooping ears.

In the middle of the afternoon, the rover crested a rise and angled off to the west, finding a smoother traverse down the slope to avoid a field of boulders the size of skyscrapers. Leah was in the aft cabin, analyzing data she had brought with her, and I was alone in the cockpit. At first I didn't know what I was seeing, looking north. The horizon was white.

This was the highest ridge between us and the ocean, so, looking north, I ought to be able to see the ocean. Was the ocean covered with ice? I overrode the autopilot and parked the rover for a moment, rummaging for binoculars to get a better view. Leah came up into the cabin.

"The ocean's white," I said.

"Odd." Leah looked at it, pondering. "Not ice; it's nearly northern summer, and the ice melted months ago. Whitecaps, from the wind, maybe. We'll see soon enough, if we keep driving."

I took that as advice, and brought the autopilot back on line. The rover started to roll. Leah reached out an arm to steady herself against a handbar, and kept on standing, looking out the bubble at the horizon.

We didn't reach the Boreal Ocean that evening. The automation on the rover was perfectly capable of continuing its traverse after dark, but we were no more than thirty kilometers from the ocean, and we elected to shut down for the night, so that our arrival at the ocean would be in daylight.

After nine hours of motion, the cabin still seemed to rock with the motion of an imaginary traverse, although I had squatted the rover in the lee of a hundred-meter escarpment.

The workstations of the aft cabin folded away into panels on the walls, and two narrow cots folded out from the bulkhead, transforming the cabin into a small but cozy bedroom. I looked at the cots, and at Leah. The cots were narrow, but looked like they might be wide enough for two, if the two slept close. Leah gave me no hints. I folded the second cot back into its niche, and convinced myself that I saw just the faintest trace of a smile on Leah's face. In any case, she slid over silently, and I nestled myself in next to her.

We reached the ocean a bit before noon of the next day. The final few kilometers was a steep traverse down the bluffs, not quite steep enough to be called cliffs, but steep enough that the rover picked its way slowly, sidling nearly crosswise down the last few hundred meters. There wasn't much of a beach; just rocks. From above, the ocean was white. It moved with something more than just the rhythmic swell of waves. It writhed, and humped, looking almost alive. As we got closer, a fine spray peppered the bubble in erratic spurts. The

spray dried to milky white flakes, smearing but not totally obscuring the view.

"Salt?" I said.

Leah shook her head. "Magnesium sulfate, mostly," she said. She spoke louder than normal to be heard over the whistling of the wind and a sudden pitter of spray. "The ocean's got tons of it. It's another reason the ocean doesn't freeze solid in the winter; lowers the freezing point a few degrees."

I squatted the rover down behind a boulder, where it would be out of the worst of the spray, and we suited up with rebreathers and sunblock to go outside.

Outside, the constant wind was warm and damp. Between the wind and the spray, I think that it was the most miserable place on Mars. Leah, though, laughed and ran like a little girl, arching her back and spreading her arms, daring Mars to do its worst.

I took off one glove, raised my hand and caught a bit of spray on my fingers, then pulled up my rebreather mask slightly to put it to my tongue. It was slightly bitter. Leah looked back at me over her shoulder, and laughed. "Don't eat too much of it," she shouted.

"Why?" I shouted back. "It's not poisonous."

"You might regret it," she shouted back. "You know what they used magnesium sulfate for in the old days?"

"What?"

"Laxative for infants! You're standing right next to the universe's largest dose of baby laxative!"

With that she turned back, and started to pick her way past the rocks toward the ocean. I scrambled to catch up with her. I could hear the ocean now, but it wasn't the rolling of waves that I heard. It was a stranger sound, hissing and popping and splatting.

In a few moments we reached a final set of rocks, right at the edge of the ocean, and at last we could observe what we had been unable to see from further away.

The ocean was boiling.

From the pools at our feet to the farthest horizon, the entire ocean was a boil, bubbles rising up and breaking, spattering spray everywhere. Enormous bubbles rose burping out of the depths with a thunderous roar followed by a tremendous splatter; smaller bubbles rose with blimps and pops from everywhere; infinitesimally tiny bubbles fizzed and hissed in rocky pools.

An huge bubble burst in front of us, not five meters distant, and I instinctively flinched, anticipating being hit with scalding spray. Leah laughed with delight. She pulled her glove off and, when the splash came toward her, bent over and dipped her bare hand into the boiling water. Before I could scream at her, she cupped a handful of water and, with a grin so large I could see it even behind her rebreather, she dashed it in my face and giggled.

The water was lukewarm.

WHEN WE GOT BACK IN THE ROVER, our coveralls were so stiff with dried spray that it was difficult to peel them off. Our faces and hands were red from the wind, and itchy with dried ocean. Leah was still in her pinkish good mood, and as we peeled down to undergarments, she was laughing.

"You know what?" she said, pulling off her rebreather, and she didn't bother to wait for an answer. "You know the great thing about it? Makes it worth the whole trip?"

"What's that?"

"You don't stink!"

I opened my mouth to say something, and suddenly realized she was right. The stench of Mars that we had gotten so used to every time we came in from the outside, was missing.

"What a great planet," she said.

We both stripped, and gave one another sponge baths. The water



recycler would have the devil of a time pulling sulfate out of the water, but that was what machinery was for. I took a lot longer cleaning her off than I had any right to, and with one thing leading to another, it was nearly dark before either of us dressed.

I knew she was waiting for me to ask. At last I did. "Leah? The water was warm, but it wasn't hot. Why was it boiling?"

"That's an easy one. It wasn't."

"But —"

"Carbon dioxide," she said. "I should have known, but it wasn't obvious until I saw it. Mars has mostly carbon dioxide in the atmosphere, so it should have been obvious that the oceans would be saturated with dissolved CO-two. It wasn't boiling — it was fizzing."

That made sense, all but one thing. "But, wouldn't it be in equilibrium? Why should it be fizzing?"

ide was under pressure. The water warmed a little, but the supersaturated carbon dioxide stayed in solution.

But it was an unstable situation, and ever more precarious as the season moved toward summer. Eventually, something must trigger the inevitable. Somewhere, a little of the carbon dioxide came out of solution, at pressure, and formed bubbles. The bubbles stirred the water, expanding as they rose, and the stirring let more carbon dioxide out of solution. The warm surface waters turned over, and supersaturated cold waters from the depths warmed up. Like a chain reaction, the release of supersaturated carbon dioxide was almost explosive, and it took only days for the reaction to spread across the entire width of the Boreal ocean. A whole winter's worth of atmosphere was coming out of the ocean, and coming out with vigor.

The wind. We had felt the wind from the ocean, a close blowing

The things that survived ...predatory plants, octopuses

"Summer. The ocean is warming up in the summer sun. Carbon dioxide has a solubility in water that strongly decreases when it gets warmer. So, as summer comes to the northern hemisphere, the Boreal ocean releases carbon dioxide."

"Oh."

And it wasn't until the middle of the night that she suddenly stiffened and sat bolt upright. "Oh," she said, in a tiny voice. I opened my eyes and watched her sleepily. "The wind," she said. "The wind."

She got up, and in a moment there was a glow as her computer came alight. She was beautiful, lined in pale fire by the glow cast by the screen backlighting.

"What is it?" I said.

"Nothing. Go back to sleep."

"It must be something."

"Just — I had a thought, that's all."

"What?"

"I wonder." She bit her lip. "Just how much carbon dioxide, exactly, do you think is dissolved in the Boreal Ocean?"

By the time the sky started to brighten with dawn, Leah was distinctly bedraggled, but she had it mostly worked out. The answer was, a lot. A hell of a lot.

Over the long Martian winter, the temperature of the northern ocean dropped to near freezing, and the ocean had served as a sponge for carbon dioxide. A peculiar convection served to stir the ocean as it cooled as the surface layers cooled and became saturated with carbon dioxide, they got denser, and sank, turning over the ocean until the entire ocean was uniformly cold and saturated with carbon dioxide.

When the spring began, the surface layers of the ocean warmed up, and the dissolved carbon dioxide began to come out of solution. But the warmer water, free of its heavy carbon dioxide, stayed on the surface; the cold, saturated water stayed below. With only two tiny moons, there was little in the way of tides to stir the depths. The water got warmer, but in the deep water, the dissolved carbon diox-

right in our faces, and we'd ignored it.

"They weren't murdered, Tinkerman," Leah said. "They were — my god, Tally's still back there, in the habitat. She doesn't know — The radio. We can get her on the radio, warn her."

"Doesn't know what?"

"I'll explain everything when I talk to her. Quick, what day is it?" She grabbed my calendar and looked at it. In neat letters, on the bottom corner of the square marked June 28, I had completely forgotten that I'd written a note: *One Martian year: RIP.*

But Tally didn't answer the radio, not the regular channels, not the emergency channel.

"Damn," I said. "It's Tally and her blasted radio silence. She won't answer."

Leah shook her head violently. "I know Tally better than that. She would listen to the emergency channel no matter what, and she'd answer when she heard us break silence. Tinkerman, I think the wind must have torn away the radio aerial. The hub was designed for space, not for Mars, and the antenna wasn't that strongly mounted. Probably blew over the high-gain antenna as well."

"So?"

"So how fast do you think this thing can go?"

It took longer to get moving than I had expected. The autonavigator wouldn't come on line. Over the night the spray had fogged over the lenses of the laser strippers, and the autopilot wouldn't budge without its obstacle-recognition system working. As I took the rover up the bluff on manual control, climbing only centimeters at a time over the rough spots, Leah fidgeted with clear agitation, but she stayed silent, knowing that distracting me from piloting would only slow us down. As soon as we had climbed a few hundred meters above the ocean, I put on a rebreather and, using half our supply of clean water, I carefully washed the laser stripper and the bubble.

The steel parts of the rover looked matte, almost corroded. When we got back, I would have to take the rover down for inspection and

overhaul. In fact, I would have preferred to do a thorough inspection right then, but I knew Leah wouldn't let me stop for that. The rover's autodiagnostics checked out green, so I put the autopilot back on line and punched for speed.

There was nothing more we could do. There was no way that I could out-pilot the autonavigation system over a course it had run before; it had all the bad terrain memorized in detail and had learned exactly which parts to detour around and which were smooth running. The ride was bumpy, but that was only to be expected. I turned to Leah, and waved a hand.

"I'm ready to listen," I said.

"IT WAS ALL THERE IN FRONT OF US," LEAH SAID. "ALL THE CLUES, IF only we'd really seen them. The pieces of the habitat, that should

were strange.
with hands...

have tipped us off right there. The habitat modules, they weren't originally designed for Mars. We knew that. Nobody ever goes to Mars, so how could there be hab modules designed for it? It's a lunar habitat design.

"The air pressure on Mars is five hundred millibars, just about half that of Earth. So we set the pressure in the hab to five hundred millibars, and forgot about it. With a nearly fifty-fifty mixture of oxygen and nitrogen in the air mixture, the oxygen in the habitat was just what it is at standard conditions, and after a week I bet you didn't even remember that it wasn't Earth standard.

"But there's one critical difference. Lunar habitat modules are designed to withstand pressure from the inside. They're plenty strong, against internal pressure. But what about external pressure?"

"It imploded."

"Right. The air pressure on Mars is not a constant! All that gas dissolved in the northern sea — when it comes out of solution, the air pressure rises. It rises a lot. The wind, that constant wind from the north — that was our second clue. The habitat was set to maintain a constant pressure of five hundred millibars inside. Nobody ever designed it with the idea that the outside pressure might increase. Somewhere there was a weak joint, maybe a seam that wasn't reinforced against an unexpected pressure from outside. It blew."

"But there was an explosion. We saw the marks."

Leah shook her head. "You saw the piece, the one with the tiny scrape of blue paint on it. What does blue paint mean to you?"

"I only had to think for an instant. 'Blue, Oxygen.'"

"Fright. The implosion must have punctured an oxygen tank in the habitat. Pure oxygen, under pressure, spurting out into the Mars atmosphere ... the Martian atmosphere is mostly carbon dioxide, but a good component is methane, and it's got noticeable amounts of other hydrocarbons as well. In a pure oxygen leak, of course it will burn."

"It must have happened at night," I said. "They never knew what

hit them. The one man was killed instantly. The other was tossed out of the hole in the side of the habitat, without a rebreather, to die of suffocation."

Leah nodded. "And now the same thing is happening. The atmospheric pressure is rising. Tally's there in the habitat, alone ... and she's waiting for the wrong enemy."

WE WERE OVER THE PEAK OF THE SYRTIS SADDLE AND A good way into the long, slow downhill toward the Hellas basin, only a hundred kilometers from the hab, when the wheel fell off. Leah was on the radio, in the unlikely hope that perhaps the synchronous relay was the problem, and now that we were approaching line of sight conditions, direct communication might raise Tally. The wheel came off with a resounding *soap*, and the rover lurched.

The autopilot diagnosed the problem, instantly rebalanced the suspension to keep the weight away from of the missing wheel, and smoothly braked us to a stop, blaring alarms.

The alarms were a little late.

We both went outside to look. It was the right rear wheel that had failed; we found it a few dozen meters further on, where it had rolled up against a rock. The wheel itself was a titanium-alloy mesh, light enough to carry in one hand, for all that it was nearly two meters in diameter. The wheel bearing was steel. Or it had originally been steel, when it had been there at all. There was little left of it.

"Well," Leah said.

"Well," I said. There was no way to replace a wheel; they weren't supposed to come off. "I think maybe we can rebalance the rover. Shift the loading to the front left side. Five wheels ought to be enough. We might have to go a bit slower."

Leah nodded. "It's a plan."

We piled rocks onto the rover, and strapped them down with bungees, to move the center of gravity forward off the missing wheel. Then we piled more rocks inside the rover, in the front left pilot's seat. I didn't mention that we would never get the Mars stink out of the rover; it was too late to worry about that, and we barely noticed it by then anyway. The autopilot refused to budge so much as a meter without an overhaul, so I piloted it on manual. This was good for less than a third the speed of the autopilot, but still, even that pace covered ground. Leah went back into the aft cabin to examine the samples she had scraped off of the wheel.

It was only a hundred kilometers. We finished more than fifty of them before the second wheel fell off.

We were going more slowly this time. There was no lurch, and no noise. The rover just slowly curved to the right, and kept on rolling until it slid to a stop on its side.

Leah came out of the hatch after I did. She didn't bother looking at the axle, or at the rover. No need; it was obviously not going anywhere, even if we had a crane to put it back right-side up. The rocks we had piled onto the rover had cracked the bubble when it rolled. "Sulfur-reducing bacteria," she said.

"Say again?"

"Sulfur-reducing bacteria," she said. "Convert iron to iron sulfide. There's energy in free iron; in the presence of free sulfur, enough energy for a bacterium to exploit. The lack of iron at the site; I should have figured that ordinary weathering wasn't enough to account for it."

"Oh," I said.

"Not that it matters now," Leah said. "We don't have time to waste. We've got to get to Tally and warn her." With a matter of fact attitude, she hopped up onto a rock and stared across the horizon. "So how far do we have to walk?"

I tried the radio one more time. Come on, Tally. What was she doing, I wondered. Did she even know that the antenna was down, or did she just think we were scrupulous in keeping radio silence? Was she standing at the door of the habitat with a gun? Hiding behind the rocks, waiting for enemies that would never come? If only she would answer, it would only take an instant to tell her about the dangerously low habitat pressure.

Fix the antenna, Tally, I thought, just fix it, and listen to the radio. But she wouldn't. Fixing the antenna would be too obviously a sign that the habitat was still occupied. I threw down the radio.

The inside of the rover was a mess, but we managed to scrounge two spare sets of replacement packs for the rebreathers. I downloaded the bearing to the hab out of the rover's computer, and set the inertial compass. Once we got close, we would be able to use the habitat's come-hither beacon to home in. I grabbed a set of portable radio transceivers and checked that they were working. I couldn't think of anything more to carry. Before we left, Leah snipped two pieces of titanium sheeting away from internal partitions of the rover, and snapped them free.

"Ready," she said.

We ran.

The Mars gravity makes it easy to run, and the unwavering wind was, for a change, on our side. Still, after an hour of running I was winded, and the second hour was more tugging than running. Our cold-suits trapped sweat all too well, and it ran down my back and down my legs, like ants with clumsy feet.

Mars narrowed in on us. Ridges, followed by valleys; valleys followed by ridges. Another hour.

"Bear further to the right here," Leah said.

"That's not the most direct route."

"I know."

We were walking pretty slowly by now. Her route followed the contour, instead of cutting downhill, and was a bit easier, even if it was less direct. I was beginning to worry that we wouldn't make it to the habitat by nightfall. It would be impossible to continue after darkness fell — Mars's moons shed almost no useful light — and by the morning, we couldn't even be certain that the habitat would still be there.

In another hour we had reached the edge of a long downhill. There, tiny in the distance was a glint of metal: our goal, the habitat.

It was impossible to tell from the gleam whether it was still in one piece.

Without a word, Leah handed me one of the two sheets of titanium. I looked at the downhill. It was a long, smooth grade, with the usual cover of Martian slime. I grinned, and Leah grinned back at me, her face in the rebreather mask like some painted mechanical demon, and then we both stood on our sleds, grasped the handgrips, and, at the same moment, pushed off.

We would arrive in style.

MY SLED SKIDDED TO A STOP IN A SPRAY OF slime a hundred meters or so from the habitat, and Leah stopped close behind me.

The habitat was apparently empty. But at least it was still apparently in a single piece. I ran toward it, shouting for Tally. I reached the airlock, and was just reaching out for the handle when I felt the gun pushed gently between my shoulder blades.

"Moving real slowly, friend, keep your hands in sight, and turn around. Slowly."

Tally was painted the same color as the Martian slime, bits of sand and rock sticking to her randomly. The projectile rifle was in her left hand, aimed steadily at my middle. I could see the crinkling at the edges of her eyes as she smiled behind the rebreather. "Finkerman. Welcome home."

She lowered the gun, and turned to greet Leah. "Didn't expect you to come back on foot. What brings y'all back so sudden?"

"The air pressure," Leah said. "It's going to —"

"Yeah," Tally said. "I noticed something going on with the air. Could feel it in my bones, like a thunderstorm. Fact, I had to dial up the pressure in the hab three times in four days."

Leah stopped, thunderstruck. "You increased the hab pressure?"

"Why, sure," Tally said.

We just looked at each other.

"What?" Tally asked. "Something wrong with that? I figured that if the hab pressure wasn't increased, there could be trouble."

Leah shook her head. "No, nothing wrong. Nothing at all."

IT WAS MY LAST NIGHT ON MARS. WE HAD FILED A PRELIMINARY report with Spacewatch, and in the morning, Langevin would bring the lander down to take us home.

I was looking out the tiny window of the hab at the Martian landscape. In the evening twilight the browns had turned to purple. Tiny puddles of water caught the sky light and reflected it back at us. Even the slime looked fragile and ethereal. "It is beautiful," I said "in its way."

"Ask me, it still stinks," Tally said.

"It's dying," Leah said.

"Dying?" I turned away from the window.

Leah nodded slowly. "I've been finishing up the work from the data they had stored to optical before the accident. They got enough data to fully model the ecology. It's dying."

"How?" I asked. "Why?"

"Oxygen," she said. "The oxygen level in the atmosphere is rising, slowly but inexorably. The photosynthetic forms simply out-compete the anaerobes, and the result is that oxygen is gradually accumulating in the atmosphere."

"But that's good," I said. "That's what happened on Earth. The biosphere is evolving."

Leah shook her head. "But Mars isn't Earth. The oxygen is starting to scavenge hydrocarbons out of the atmosphere, and after that it will begin to displace carbon dioxide. Just like on Earth, but for Mars, that will be catastrophic. A few tens of millibars less carbon dioxide, and —" She clapped her hands. "Frozen solid. End of story."

"But the Gaia hypothesis — doesn't the presence of life regulate the temperature?"

She shook her head. "Bacteria are dumb. Gaia is a hypothesis; it's never been a proven theory. In this case, it happens to be a wrong theory."

"You're sure?"

Leah nodded. We were silent for a moment, and then I asked, "How long?"

"Hmmm? Well, couldn't say precisely. Not enough data."

"Give or take."

"I'd give it five thousand years at the outside. Probably less than a thousand." She saw me smiling, and added, shaking her head, "The time may be uncertain, but the fact still is, it *will* happen."

That put a little different spin on it. We would all be dead before the planet returned to bare rock. No need to mourn for Mars, not for quite a while yet.

LATER, ALONE WITH JUST LEAH IN THE TINY SLEEPING cubbyhole, I made love to her slowly and deliberately. She closed her eyes and arched her back as I stroked her, in her own way sensuous as a cat, but still I couldn't tell what sort of feeling she had for me.

When it was over, and we were lying in the dark, I had to ask. "Do you feel anything for me? Anything at all?"

Leah turned over. "Quit asking meaningless questions. I *unask* your question, Ma."

Much later, after I thought she had fallen asleep, she said softly, "It looks like I'm stuck with you. I suppose there are worse people I could get stuck with. Don't get in the way."

It was all I could ask for. I will follow her as long as she will allow it, love her, ask nothing in return. Maybe someday I will mean something to her, maybe some day as much as a comfortable pair of slippers or a favorite chair.

In the meantime, though — it was a large universe. There would be places to go, no end of places to follow her to. That was enough.

In the morning, the lander would come, and I would follow her home. □



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The explorer from Earth came in search of new wonders, never expecting
to find the true meaning of love as well.

your eyes, my darling, black and white and blue

BY KAREN HABER

Illustration by Bob Eggleton

FIRST CAME THE BEADS. SILVER, STRUNG SLIDING BETWEEN COLD gems in a dark bowl. Tali dreamed of them, of beads and other things: frozen fire and pale flashes in the purple sky, brightness that roared and blinded, and a strange being wavering through pale mists and pulsing lights, singing a long song in an alien tongue.

She curled against the warm stone of her cave and rocked in her sleep to alien music. Awakening early, she floated for a moment on the edge of morning.

A stranger? There were no strangers here, only her people. She arose, made the ritual greeting to her nestmates, and contracted her limbs in preparation for the day's harvesting.

Outside the nest the green light of the twin suns was strong in the orchard, casting long red shadows on the eriau grass. Tali's mind was easy and quiet as she gathered black fruit and spotted berries for the evening meal.

With the life-giving light warm upon her, she was tempted to dismiss the odd dreams

as mere night thoughts and notions, dissipating like mist at daybreak. But the ghosts of dreams lingered, whispering to her, and Tali could not keep herself from listening, from wondering.

— Tali!

It was her cousin Dolmin, very solid, very real in the hot sunlight. Dolmin, her mate-to-be.

— Why aren't you helping my mother and sisters prepare the Festival cave? His crest, more gray than green, revealed his immaturity. It sat barely upright midway up his long lavender beak. — You know that we're nearly ready for the feast.

He and Tali were as yet unconsummated

but his manner was that of one longtime mate to another. Rather than reply directly, Tali exuded a scent that she knew he disliked, and moved away toward a stand of motiled berries.

Dolmain's crest rose a bit higher. — Once we're mated I won't tolerate this kind of behavior.

— We're not mated yet, she replied sharply. — Not until the Festival after this one.

Tali kept her back to him until he had moved off, returning to his precious Festival preparations, and she was wonderfully alone among the trees. Tali wouldn't love him, ever. Couldn't.

The betrayal had been her clan's doing. She knew that she would soon be taken up by brood concerns and her own precious nestlings. Once she had mated with Dolmain he would not matter very much more to her than he did now.

Clusters of succulent orange-brown berries hung within reach. She unfurled one of her sinuous yellow arms and absorbed the treat with pleasure.

A sudden sawing together of twigs and a whisper of grass crushed underfoot brought her out of her reverie. Dolmain again? Tali checked her excrement sac and saw that she had plenty to fling at him.

But the longer she listened the less convinced she became that her petulant cousin was fingering in the shadows, spying. The rhythm and weight of the steps was unfamiliar, odd, wrong. Tali knew every footfall of every nestmate. No, it was no one she knew. Some unknown thing was out here, stalking her. Nightfeeders? Her double heartbeat began to labor and she wheezed with fear.

Had she stayed out too long? No. The suns were still casting long shadows. It was still afternoon, too early for the dreaded hunters to emerge.

She had seen them once, leaning on their spiky black legs and clicking claws, gathered by the nest's mouth, watching, kept at bay only by the golden flames of the fires. Their huge amber eyes had glinted hungrily. The memory made her shiver.

Again, strange footsteps.

Tali knew of no other feeders that hunted by day, but she hid herself nonetheless. In a moment she was a dappled twist of tree trunk wreathed in purple eriani grass.

Safely disguised, Tali cast her mind in a wide and sweeping arc.

At first she touched nothing but the small trifling thoughts of the tiny sod-dwellers. On her third pass she was enmeshed within a kaleidoscope of peculiar colors and sounds, lost, tumbling, dizzied by things she felt but couldn't understand. Slowly the confusion resolved into a landscape, a sky, a meadow. But the sky was wrong, outlandish, a garish blue that shocked her. Dreadful. The ground was a nauseating shade of brown. And what were those structures? What was that light in that terrible sky? Silver beads with fire at one end. Wrong, all wrong and frightful in their wrongness, all jumbled and strange. The lacerating yellow sunlight. The awful green trees.

She was caught within the matrices of an alien mind. Assaulted by odd odors, strange sounds, stranger thoughts. She would have fled, but for one odd and compelling image which held her there for a moment longer.

She saw a being, tall, with four limbs, two of which seemed to dangle uselessly, and an oversized head — with only two apparent eyes! — partially covered in pale filaments completely unlike the orange crests of Tali and her nestmates. And it was the same color all over, a vague pinkish brown.

There were several organs on part of the head but the use of each was unclear. The body seemed to be a series of intersecting curves, quite peculiar. And yet the entire image tingled with the most positive emotional associations. Tali felt a deep, wistful, all-pervasive yearning.

The sensation coupled with the image was so powerful that Tali could not help herself. Without conscious volition she assumed the guise of the being she had glimpsed within the alien's brain.

As she did so, the stranger emerged from the trees and came toward her. It was bipedal, tall, with an oversized head, and two useless forepaws.

Tali's heartlung throbbed with excitement and fear.

The alien's form was similar to the one she had chosen as her disguise, but not quite identical: taller, leaner, with hardly any intersecting curves at all. The filaments atop its head were dark and much shorter than hers.

The stranger stopped moving and stood near her, very near, quivering like a molting nestling while emitting odd modulated noises.

For a moment Tali didn't realize what was happening.

"Don't be afraid. I won't hurt you. Please. Don't be frightened. Can you understand me?"

The notes, ascending and descending in strange patterns which she had never heard before, were oddly familiar. The music came from an organ on its head that seemed to ripple like the end of a moutharm. But a mouth on a head? And only one?

Somehow, Tali knew that the sound was song-speech, and that the stranger was singing a language — with its only mouth! — that she had heard in her dreams.

Song-speech, but she knew what it meant. Perhaps her inadvertent trip through the thing's mind had somehow sensitized her to its language. Was the alien unable to converse mind-to-mind? She felt pity for it.

"I said, can you understand me?" it sang.

Suddenly terrified, Tali turned and darted into the shelter of black leaves. As soon as she was hidden by the foliage she took on the appearance of leaf-flecked ground.

"Wait," the stranger cried. "Please, don't run away. I'm not going to hurt you. Come back!"

It tried to follow her but went thrashing off in the wrong direction, out of sight. Not until its mental emanations had faded from range

did Tali resume her natural form.

Amazing. Wondrous. Strange. Her heartlung pounded. She felt giddy and lightheaded.

She would have to tell the Elders, of course. Any threat to the nest must be reported, and all strangers were threats.

What would they say? Would they have her come forward to tell the entire tribe about it at the Festival? Would they sing a song just for her?

The suns were blue-green as they set. The Festival flames would be keeping. Suddenly eager for the feast, Tali hurried back to the nest.

THE SACRED BLAZES HAD BEEN KINDLED IN THE ANCIENT CAVE AND THE combat dances enacted by the warriors. Fire raptors swooped from the soot-blackened ceiling over the heads of Tali's nestmates, casting bright plumage down upon the clamoring group. All reached up moutharms eagerly to catch a fire feather at festival time was auspicious indeed. One floated down, flickering red and silver just within Tali's reach, but before she could touch it, it was snatched out of her grasp.

She was caught
within the matrices
of an alien
mind. Assaulted
by odd odors,
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wonders.

Tali's nestmates — those of age — were already mating in groups. She watched them, but she found her thoughts wandering. Always before she had felt impatient, envious and eager for her own mating time. Tonight the sight barely held her interest.

She passed a circle of immature males and there was Dolmin peering at her, his eyes glowing like embers escaped from the firestones. The very sight of him infuriated her. She pretended not to notice him and veered away. She wouldn't share her day's adventure with Dolmin. Never, never, never.

For that matter, why should she share it with any of them? The story belonged to her, to her alone. She would ponder it in luxurious privacy, later. Tali reinforced her own personal shields and faded back into the Festival crowd.

After the ritual matings came the group loving and then the guttural chants that signaled the beginning of the Elders' tales. Always before, Tali had sat with the others, rapt and waiting for the next verse. But this night she felt restless and even before the Tale of the People was half over she had pulled herself to the edge of the circle, too distracted to listen. It was an old story and she knew it too well: We were few and tiny. We toiled across the terrible desert, forced to eat one another for survival. Yes, yes, yes. She could recite it asleep.

Today, in the orchard, she had seen something new, something that made her heartlung pound with excitement. And tomorrow? She crept away from the heat and light to think about that.

SHE SLEPT LITTLE. ONLY ONE SUN HAD CLEARED THE SHOULDER OF THE land when she awoke and went forth. The night's creatures had retired but the day was barely begun and nothing stirred. Yet somehow Tali knew she would find the stranger somewhere in the bright and early stillness.

Again, she felt the alien's emanations before she saw it and learned that it had been wandering since well before dawn, examining sapsuckers and the like.

Instinctively, automatically, she took on the lineaments of the previous day's disguise.

The stranger saw her and bared blunt white incisors in its single mouth. Tali found the sight disconcerting but decided, after a pause, that this was an indication of nonaggression rather than a declaration of intent to eat her.

"You came back," it said, making the crooning sounds that expressed thoughts. "I hoped you would. Please, don't run away. I'm harmless. See? I'm sitting down. And my hands are empty." It raised two forelimbs and spread its tapering digits in some significant yet obscure gesture. "Please talk to me."

Tali marveled at the unfamiliar mode of communication. The myriad of noises, the low growls, the high squeals. How very brave the alien was to have come here with all of its pitiable limitations, venturing away from its nest! And that nest was so very, very distant. She could just barely see it in the stranger's mind, and, in amazement, comprehended that the lights in the night sky were something other than random odd cold glimmers. They meant life. Other places and beings. It was a startling thought, one she tucked away for later consideration.

"I'm a friend. Friend." Again, the odd gesture with the forepaws. Something glinting and bright there. "Can you understand me?"

The alien was quite strange and yet not exactly unpleasant to look upon. The two jointed limbs above and two below were not wrong so much as odd. The two eyes, tri-colored white, blue, black, balanced precariously above what appeared to be two hooded orifices — breath-holes? — and a single slash for a mouth: unexpected but not exactly awful.

Her sense of it was that of an honorable being. The brain, while certainly strange and disorderly, contained no malice or evil that she could perceive. The stranger seemed benign and eager — even desperate — for contact.

Tali had never been lonely, had no word for it in her clan's lexicon, and so she sensed rather than understood the feeling transmitted by the alien. It had an agreeable poignancy.

"Can you hear me?" the alien said. "Do you understand me at all?"

"Yes," she said, marveling at the sounds she produced from her odd facsimile of a mouth. "Yes, I do."

With surpassing gentle strangeness it told her that it was a human and that it had come a very long way to meet her people and make friends of them for its nest — a very large nest that it called *Alfonse*.

In turn, she told it what it wanted to hear — after all, she could see the desire right there in its mind, couldn't she? So yes, her people were of its people. Humans, whatever those were.

"What's your name?" It held a silvery egg in one of its paws and waved it at her.

"Tali."

"A pretty name. I'm Ethan York. Tali."

Ethan York. Mysterious and pleasing.

"Do you live here?"

"A foolish question. Where else? 'Of course.'"

"How do you survive? What do you eat?"

She gave a noncommittal gesture. "Whatever I can find."

"How did you get here?"

"My parents."

"And how did they get here?"

She hesitated. What should she say? In the stranger's mind she saw an image of metallic beads sliding from light to distant light. She understood that they contained other beings.

"Like you did. In a silver bead."

"A ship? Like scouts? You mean they were Terran scouts?"

"Terran scouts," Tali paused. What were those?

She sensed an effort on the alien's part to contain sudden excitement. It trembled slightly. "Incredible. They must have been part of the Touchstar project."

Tali shrugged.

"Yeah, that makes sense." It moved its head back and forth, up and down, several times. "I heard about those pioneer couples. Some went out and never came back. But there aren't any reports from this sector in the records."

"There aren't? Sectors? Records?"

"That ion cloud near your planet really plays hell with transmissions, you know. That might account for it. But how in the galaxy did your folks manage to land with their old style solid state workbooks?"

"I don't know," Tali nodded vigorously and showed her incisors for good measure.

The Ethan York appeared confused by her response and she hastily amended it, closing her mouth and casting her gaze to the ground.

"Well, even if they did land in one piece, half their hardware was probably fried. Mine nearly went on the way down and it's made of cermet. No wonder they couldn't report back," the Ethan York said. "But I still don't get it. I've been scanning and I can't find any sign of human habitation." The human stared at the silver egg in its hand. "And your readings are all wrong, too." Its eyes were suddenly hard, its stare suspicious. "You look human but you sure don't come up that way."

"I must go." She stood up.

"Not yet, Please."

But she was already turning away, moving behind a wide-trunked fever tree to cast off the image of Ethan York's kind. She became one with the forest, taking on the appearance of a stand of purple-stemmed windflowers nodding yellow heads in the cool late breeze.

She could hear the human making comments to its egg: "She's disappeared again. I'm attempting to follow. Same old readings from nearby..."

Tali held her breath, heartlung aching. Would it follow her and, with the help of those magical eggs it talked to, find her? What should she do? Was it a threat to the nest?

A moment later, the alien came up behind her.

Tali's heartlung felt as though it would burst.

The Ethan York paused, then hurried past as its strange silver egg beeped, leading it off to the left through a musode grove, and away. Tali waited. Only when its mental emanations had faded to indistinguishable

plorable matters did Tali shift back to her real form.

SHE SLEPT HEAVILY THAT NIGHT AND HER DREAMS WERE FILLED WITH odd noises and wide tricolored eyes. Once awake, she was preoccupied by the Ethian York, but she kept her thoughts shielded for protection from the tribe. Outwardly she appeared unchanged: dutiful Tali moving toward the orchard to gather fruit for the evening meal. But inside she quivered at the thought of seeing the stranger — her stranger — again.

It's dangerous, she thought. If the Elders learn of this they'll be angry. But I must see it again. Alone.

She told herself she would indulge her whim only one more time, and never again after that. She told herself this although she knew that she was lying.

THE ETHAN YORK WAS WAITING FOR HER IN THE MEADOW NEAR the orchard.

"Ah, you came back! I hoped you would." It paused, obviously pleased. "But I'd hoped you would bring the others with you as well." So the stranger understood that there were others. Tali felt a tiny bit alarmed.

"No," she said. "I came alone."

It persisted maddeningly. "When will I meet the others?"

"I don't know." Somehow she had to get it off that subject. "Come walk with me."

She led it along leaf-strewn pathways, away from the nestmound, and deep into the groves of immature fever trees, their bloomers tightly furled into gold-speckled knots.

They walked for a long time, until the twin suns were blazing high in the green sky.

The human seemed to enjoy the journey. It made an odd melodic crooning sound in his throat — different from speech — as it strode beside her, pausing now and then to exclaim over a rock or sprouting, pulling out the silver egg and waving it above whatever caught its fancy.

"What a fine day." It reached out and took her hand. The sense of its pleasure in the act was peculiar. And yet something about it pleased Tali, pleased her immensely.

"Your eyes, Tali. They're so beautiful. So green."

The human was very close to her.

"And your skin," it said. "It looks as soft as velvet."

She could feel its breath upon her face.

"May I touch you?"

"Yes," she said. "Yes."

It touched the tip of its forelimb to Tali's disguise. Again she felt a pleasure so intense that she was completely unprepared for the next thing the stranger said.

"You're not really human, are you? But humanoid in appearance." Tali tensed.

"No, don't pull away. You have nothing to fear from me. Whatever you are, Tali, you're exquisite. Tell me about your people, please."

She hesitated, uncertain what to say.

"I — I can't."

"Why?"

"It's forbidden."

"And who forbids it?"

"The Elders."

"Ah. Now we're getting somewhere. Tell me about these Elders."

"I can't. Please, Ethan York, don't ask me."

"Why not? Do they have some sort of power over you?"

"Yes."

"Then let me meet them."

"You ask for the impossible."

"It's my nature." The human paused soundlessly. It raised a limb and touched the side of her face. "Beautiful," Ethan York said softly. "Like a wildflower."

Tali trembled, but not from fear. She had received a startling impression of intense arousal from the alien. To her surprise, she saw that the Ethian York was male. Adult, male, and unmated.

"Let me meet your Elders. Please."

"You ask and ask for this thing. Why?"

The human seemed startled by the question. "To learn, of course. To talk with them and learn. How they — and you — live."

"And what would you do with that knowledge?"

"Take it back to my people, to share it with them."

"And it would help them? This knowledge would help your nest-mates?"

"Nest-mates?" His eyes were still bright but lit now by a different, colder light. "That's an interesting term. Why do you call them that?"

Tali made no reply and looked down at the tangled roots beneath her feet. She had already said too much.

"Human. The silent treatment. I guess you want me to change the subject." The silver egg was in the human's hand again. As Ethian York fiddled with it Tali saw from his mind that it was a device to preserve her words, like a Festival song. "Okay, my friend," he said. "How about this: Have you seen any sign of others who live here? Different life forms?"

Tali thought for a moment of the nightfeeders. She hesitated. What to say? Instinctively she decided not to give Ethian York quite the response that he seemed to desire. "There is no one here but my people."

"Are there many of you?"

"No." Now, please, she thought, stop asking.

If she had understood chagrin, she would have felt it as the human's mental output momentarily dimmed, then brightened once again.

"So this planet is underpopulated?" he said. "Interesting. It could be a promising colony for the Alliance. We really have nothing in this sector. And if you're as close to humanoid as I think, your survival here would practically certify this place as safe for Homo sapiens. I have to meet your Elders. To discuss a treaty."

The hunger. Newborn in his mind but red and dangerous. And yet Ethian York wanted her assistance so badly that she could not help wanting to give it. What was she to do?

"Course," said the human. "I want to show you something."

He led her along a winding trail, through a stand of odoberry bushes whose branches were heavy with ripe green fruit, and into a clearing.

A silvery ball sat there, a vision out of a dream.

"My ship." He strode up to it, passed his hands over it, and an opening appeared in its side. "Come on. It's perfectly safe."

Curiosity warred with fear in Tali's mind. "No, I don't think I should..."

"Oh, Tali, I'm harmless. But, okay," Ethian York gestured.

"Wait there. I want you to hear something." He disappeared inside his vessel.

A moment later she heard the sound of a voice — his — talking.

"What's your name?"

"Tali." A higher, lilting voice. Hers?

"A pretty name. I'm Ethan York, Tali. Do you live here?"

"Of course."

Ethan York popped back out of his vessel and showed his white incisors. Tali stared at him. Was he some spirit casting a frightening spell, stealing her voice? "That was our conversation from before," she said. "How did you do that?"

"It's all in my computer, Tali. I've recorded everything you said."

The human paused. "I hope you don't mind."

Tali waited until her hearing had calmed. Then she said, "Show me this, this computer."

Ethan York beckoned her inside and this time she went.

It was like a small silver cave, Tali thought, lined by row after row of flickering lights. And there, nestled cozily, a bed with orange cushions.

"Computer," Ethan York said. "Who am I?"

Another voice, flat and grating, answered. "Lieutenant Commander Ethan York, currently assigned to the scoutship Free Bird."

"And what is my mission?"

"To make contact with new races and initiate diplomatic relations."

"By peaceful means?"

"Affirmative. You have signed a non-aggression clause."

Tali listened, wonderstruck. The words meant nothing to her but the mere fact that Ethan York's vessel could talk was impressive. He looked at her from time to time, nodding. Obviously, whatever was being said was highly significant. She nodded back.

"There," he said. "See? Peaceful. Non-aggressive. It's in my contract. I've shown you my secrets, Tali. I've bared my throat. How about you?"

He wanted, so badly. And so she lied. *"I must see my people,"* she said. *"I'll tell them that you're here and request a meeting."*

The alien showed his teeth. "Wonderful! I'll come with you."

"No," Tali wished that he would close his mouth. *"You would upset them."* That, at least, was true.

"Then I'll wait you there and wait outside for an answer."

"No, please. It must be done delicately. Tomorrow. We'll meet near here."

"What time?" The red hunger again, pulsing. *"The same time."*

Ethan York seemed to accept her proposal but she saw in his mind that when she left he intended to follow her, to spy upon her. How foolish this creature was. But somehow so appealing, too.

Again, she left him easily, one moment there, the next gone.

"Tali, wait!"

His voice faded behind her, caught by the wind and tossed away.

The human wandered alone, calling her name.

Nearby a tree-stump shimmered in the waning sunlight, shifted, and became a familiar shape. Dolmin. His green crest was rigid in fury.

His rim of red eyes gleamed and he clicked his beaks in anger. — Tali, you've broken tribal law.

— And you've been spying. Dolmin. How dare you?

— I have some rights in this matter.

— You have no rights whatsoever.

— You allowed it to touch you! It should be killed.

— You should be killed, Dolmin. For stupidity. And cowardice. Hiding and spying! Run along back to the cave.

— Tali, I won't have my future mate put the tribe at risk.

— Risk? Don't be a fool.

— Perhaps if you were kinder to me I could overlook this . . .

He moved closer.

Even as she pulled back Tali knew she should cajole and pacify him, promise and plead. But he had angered her as he always did and that, in turn, made her reckless.

— And perhaps I'll tell my mother to nullify our betrothal. I will, if you don't stop spying on me.

— Beware, Tali.

She made the sign for fury. — Begone!

Dolmin took an angry swipe at her with several of his moutharms. She ducked him easily. His crest was fully engorged now, bright green and throbbing. Tali laughed derisively at the sight of it.

Dolmin stared at her for a long moment with love in his eyes, then turned and left her in the grove.

Stolid, singleminded Dolmin, she thought. Did he ever wonder what the lights were in the night sky? Did he ever even bother to look up?

agenates and enjoyed the final group loving. All came away renewed and enriched. The extra nest space was certainly welcome. Tali wondered did Ethan York's people have Festival? Did they share love?

After the loving, a representative of the Elders council approached her.

— Come.

Tali felt as if every one of her moutharms had turned to stone, too heavy to move. But refusal was unthinkable. She forced herself to go forward, step after dreadful step, following the messenger back to the council chamber.

It was the largest cave of the nestmound, a smooth-sided ovoid in which the Elders rested easily. They were arrayed for Festival and obviously annoyed at the necessity of meeting before reciting the ritual tale. Dolmin was among them, his eyes hooded and baleful, his crest nearly flat.

Tali wheezed with fright.

— Tali, we are at risk and you have done this.

— Sacred elders, no!

— Don't attempt to lie. You were observed.

— Pardon, this one begs your understanding.

— Silence! Didn't you meet with a stranger against all clan rules? You have willfully broken our code and endangered the nest.

Another Elder mindspoke her. — You have little value to the nest. You aren't yet of brood age and your mother has several other daughters. There are many among us who would have you ended.

Ended? Never again to see the twin suns in the sky? Tali couldn't bear the thought. — This one begs clemency.

— As did your mother, who is overfond. However, in regard for her standing among us we have tempered our judgment. Stand ready to receive our final word.

Tali felt as if her heartbeating would vibrate right out of her body.

— This stranger must die. You will help to lead him to the dust pits beyond the forest. Tomorrow.

— But . . .

— You will be ended if we must intervene in this matter. And your family will be disgraced forever.

The dust pits! Dark and loathsome chasms at the edge of the trees. To have Ethan York to the pits, to his end? No. It was awful, impossible. She would have to save him somehow. But she gave no sign of what she was thinking, shielded her thoughts, and instead, made the expected response.

— It will be as you say, Oh Wiseest.

— Good. Now you may rejoin us at the fires.

She made a show of accompanying the Elders back to the Festival cave. But as soon as possible she pulled herself back into the crowd and went off to her corner to think.

That night Tali slept a cold, dreamless sleep. The suns were both high in the sky by the time she emerged from the nest. The words of the Elders rang in her mind.

— This stranger must die . . .

The way to the dust pits took her through a mosaic grove. She looked up, saw dust billowing in red clouds above the trails between the ancient nestmounds, and knew that the human, Ethan York, was approaching.

"Tali?" he called. "Where are you? Don't be frightened. Please. I want to see you. You promised."

"I'm here," she called. "Just a little way farther down the path. Beyond the trees. I'm waiting with the Elders." She peered out

Continued on page 95

THAT NIGHT THE FESTIVAL FIRES LEAPED HIGH AS TALI SAT WITH HER

Did he ever
wonder what
the lights were
in the sky?
Did he ever
even bother to
look up?

The far future will be so different from today as to be almost unrecognizable.
But in many fundamental ways, nothing will have changed at all.

TEN THOUSAND LIGHT YEARS FROM ITS HOME NEAR THE CENTER OF the galaxy, the *Kris* ship warped the void of space-time.



WHEN TABITHA WAS TWO, HER MOTHER changed sex. That didn't bother Tabitha, but her father moved out.

"Will he come back?" she asked. She stood dwarf-like between the Grace-land-style columns at the front of her house. Mechanical sheep mowed the lawn.

Mother scratched his new beard, looking pensive. "I don't think so. He's gone to join the Pulaski group mind, like your grandfather did. It's like getting married."

Tabitha already knew what a group mind was, because she'd asked her augment, the part of her brain that was beyond human. It had been implanted when she was one year old.

"Will I marry the Pulaskis someday?"

Her mother smiled. "Maybe you'll marry Richard instead."

Tabitha made a face. "Richard is a boy."

"Boys aren't so bad," her mother said defensively. "I like being one."

Tabitha looked up at the artificial blue sky, where children played in the gravity-free zone around an ansible tower. Richard was probably among them. As always, the bright yellow sun shone directly overhead, and the horizon blurred to infinity in all directions.

"I'm going to talk to Grandfather," she said. She let her augment take over her senses, and her mother vanished.

She found herself in one of the orbit labs, which supervised the transportation of raw materials from the outer worlds to the shell around the sun. The air smelled of chicken soup and ozone, and Chopin's Sonata #2 fought with the hum of machinery. Her grandfather drifted in free fall before a projection showing the rubble that was all that was left of Jupiter.

"Hello, Tabitha," he said, his augment sensing hers.

"Lo," she said, nodding politely. "Is Father part of you now?"

"We are becoming. It's a process, like building the house for the sun."

"I'm a process, too," she said.

His face crinkled into a smile. "A very pretty process."

"What will you do with Father?"

"Do you know how much longer it will be until the machines finish the Dyson sphere?"

"Thirty years, one hundred twelve days, five hours, fifty-six minutes and five seconds," she said, reciting from her augment. "Terrestrial time," she added.

Grandfather nodded. "And then what happens?"

"All the light stays in the house."

"What if someone's watching from outside?"

"They'll see the sun go out."

Her grandfather nodded. "We think someone's watching. Your father will help us find out."

IN THE REAL-TIME OF LIGHT, THE CONSTRUCTION OF THE BLACK STONE on the galactic rim had not yet begun. But in the no-time of ansible transmissions, the construction proceeded at a furious pace. The Kris ship drained energy from suns along its path, traversing light-years in mere hours of ansible time.

When Tabitha was four, her mother asked her if she liked cats.

"I like them," Tabitha said carefully, "but I don't want to become one."

Her mother shook his head. "Gene-morphing doesn't turn you into an animal. It just gives you some of the characteristics. You can have a cute kitty face without being a cat."

"I like my face the way it is," said Tabitha politely. "Richard has a tail, and it's always getting stepped on."

"You look so drab among the other children. Their parents will think I've taken religious vows."

"I'll explain if anyone asks."

Her mother sighed.

Tabitha looked across the plain, where a gas whale floated over a field of potato-bean plants. Artificial wind blew the crop in slow green waves.

"Grandfather" — she corrected herself — "The Pulaski group mind showed me a projection of the A-wave. They think it started at the galactic core."

"What? What's an A-wave?"

"Don't you ever talk with your augment? It's the ansible anomaly. It's ..." Her voice trailed off as she decided it would be rude for a four-year old to explain current events to her mother.

"Tabitha," said her mother, looking her straight in the eye. "You're a little girl. You don't need to think all the time — that's what group minds are for. And trust me, group sex is more fun. Now go play."

THE SUNHOUSE TRAP

BY GEORGE S. WALKER

Illustration by William Stoneham



"Yes, Mother."

"And don't wait up! I've got another date with Merilee and Zana tonight. Have Kitchen make you something decadent for supper."

Far behind the Krii ship, over a thousand huge spheres orbited in stasis around the black hole. The Krii had been extinct for billions of years, but the collection — and the collector machine — remained.

When Tabitha was eight, she escaped from the party where Richard was showing off his new tentacles, and walked all the way to the Pulaski Institute.

Her father sat her down in his chair and showed her an image of the Stone Garden.

"It's pretty," she said. "What is it?"

"The center of the Milky Way, and the answer to the Fermi paradox, which says —"

"I know what the Fermi paradox is," Tabitha interrupted. She quickly studied her father's face to make sure she hadn't offended him. "So the reason no alien civilization has ever contacted us is that they're all here?" Thoughtfully she traced her small finger through the image. "This is the event horizon of the black hole at the center of our galaxy, and the orbiters are Dyson spheres like our own, right? Since each sphere is a different radius, I'd guess that each was created by natives of a different star system."

Her father nodded, waiting expectantly.

She looked at him quizzically. "But our telescopes can't see anything near a black hole, because there's not enough illumination."

"It was captured via ansible, Tabitha."

"But to do that, you'd need an ansible transmitter at the core. My argument says the farthest ansible is less than twenty light years from the sun."

"Who do you believe?" he said with mock gruffness. "Your father or your argument?"

She smiled. "I believe the Pulaski group mind." She continued to trace the image, looking at his face. "Is this a good thing or a bad thing?"

"The garden is dead," he said soberly, "and the A-wave is coming straight toward us."

The Krii had been afraid. But because they'd been the first civilization in the galaxy, it was their privilege to ensure that they were the only one. They built the collector machines to seek out budding civilizations, freeze them in stasis, and imprison them in orbit around the black hole.

BY THE TIME TABITHA WAS SIXTEEN, RICHARD HAD CHANGED sex five times, a different one each time. Tabitha's mother had gene-morphed to become sedentary, and taken up aroma therapy as a hobby. Her short-cropped hair was the color of snow.

Mother sat in the center of the house gravity field, dipping a brush into tiny scent bottles and painting the contents on each fingernail. It sniffed the results critically.

"What do you think?" asked Mother, holding its hand out to Tabitha.

"Smells like lilacs and isopropyl alcohol and ... tofu?"

Mother rolled its eyes. "At least you got the lilacs right." It leaned over to look at what Tabitha was doing. "Aren't you a little old to be playing with model rocket ships?"

The pieces floated in the air as Tabitha manipulated them with her argument.

"It's a prototype of the probe they'll send out to look at the A-wave front," she explained. "The Takahara group mind has a theory for a faster-than-light drive." Tabitha floated two pieces toward Mother with her argument. "That one's a normal antimatter containment pod, and that one's the Takahara drive — if they can get it to work."

Mother sniffed. "Well, of course it doesn't work. It doesn't even smell right."

The Krii ship had watched races evolve, different stages in different order. Each invented new ways to harness energy, new ways to travel. And ultimately, each discovered the ansible, the tripwire of its doom.

By Tabitha's thirty-second birthday, the Dyson sphere was complete, but part of it was already being disassembled to construct escape arks. Tabitha had a new argument that could solve N-body orbital problems a million times faster than her old one. Mother had become a red-headed female and cloned herself.

"We can't understand why you won't do it," said Mothers. "One of us stays here and the other goes to the Centauri system. It's win-win either way. Until the launch, we do everything together to maintain the nature-nurture match: identical twins." They nodded in unison.

"Centauri isn't like Sol, Mothers. It's a binary system, so it can't be Dysoned. Whoever goes there will be living in shield-domes on small planetoids."

"Richard's going," purred Mothers seductively. "Two of them, a man and a woman. And two Richards will stay here."

"Good for Richard," said Tabitha. "He always kept up with the trends."

"Well, if there's one thing you need, Tabitha, it's to spend more time on your love life. What happened to the last man we set you up with, that Adolph fellow?"

"The one who tried to tattoo my breasts on our first — and only — date?"

"You had a good time, didn't you?"

Tabitha shook her head.

"What will you do?" said Mothers. "You don't want to get cloned, and you don't want to join the Centauri cruise."

"I'm going to join the Pulaski group mind. The Takahara probe is well on its way, and the Pulaskis want another perspective on analyzing the data it returns."

Mothers sighed. "You think too much. Haven't we talked to you about that?"

The Krii ship saw the ansible-spark cross the wave front of its defense. The spark was superluminal, a space-time machine from the rim. For an instant, it continued traveling faster than light, then exploded. The collector machine left the debris far behind it.

"YOU'RE LEAVING ME?" SAID MOTHER. HER MOUTH HUNG OPEN IN disbelief.

Mother had redecorated the house as a Mongolian yurt, and dissonant bleating came from holographic goats.

Tabitha was sixty-four, nearing the prime of her life. It occurred to her that, as part of the group mind, she had already left Mother twice before: once as husband and once as father.

"I've been chosen to pilot one of the Takahara ships in the attack against the Stone Collector," she explained. "They need a group mind intimately familiar with our knowledge of the Stone Collector and ansible theory, but strong enough to survive. I'll go as an extension of the Pulaski group mind, argument-linked by ansible."

"When will you be back?"

"In twenty-four years, seventy-five days, local time. Of course, I'll be younger when I get back, due to time-reversal."

"I'll be an old woman ..." Mother's voice trailed off.

"Nonsense, Mother. You can be anything you want." She gently kissed her mother-wife-daughter on the cheek. "See you when I get back."

The Krii ship hadn't changed in billions of years. It remembered battles won, never lost. Yet somehow, its own world had died. One by one, so had its felloes collector machines. But the order to protect remained.

By the time the fleet neared the A-wave front, FTL time dis-

tortion had reduced Tabitha's age to thirty-two. Her augment had kept her mind from regressing, and ansible-updated nanomachines had done the same for equipment, including Tabitha's augment. Her ship was the last in the chain of eight.

From Sol, Father's thoughts joined hers: "The Takaharas will get enough honor as it is," he grumbled. "They should have let all the ships release disassemblers at once."

"The Pulaskis have a long tradition of sweeping up after the generals," answered a thought from her grandfather. "But this time, everyone will watch how we hold the broom."

"Quiet," said Tabitha. "I need to concentrate." Then she wondered if she'd already said that, or was planning to. The time distortion and updates from the augment provided a constant buzz of confusion.

The lead Takahara ships were broadcasting data from the A-wave front, which spread across ten light years. The first probe, years before, had made the mistake of flying into the center of the wave and been destroyed instantly. This fleet's line was a wide spiral.

"One and two, passing through the wave," said a Takahara voice.

The two ships vanished. The wave swallowed their ansible signatures.

"Did they release disassemblers?" asked the Takahara mind from Sol.

"No sign," said a mind from another ship. "They may have released behind the front."

"Ships three and four, release on contact," ordered the Takahara mind.

"Coming up ... Now!"

Both ships vanished.

"Anything on scan?"

"They must have released too late," someone offered.

"But what happened to the ships?"

Tabitha fought to maintain a train of thought and analyze the data.

"Tabitha," asked the Pulaski mind, "what do you see?"

"See? Nothing. Light can't keep up."

"Five and six, release before contact."

"Now?"

"Now!"

Tabitha's augment informed her of the release, hundreds of miniature Takahara drives launching toward the wave. Then the ships vanished, along with the disassemblers.

"What do we do?" asked Tabitha's counterpart in ship seven.

"I don't know. I can't think. I can't think at all!"

"We're thinking for you," said the Pulaski mind.

"But you don't have a plan!"

"Release now," said the Takahara mind.

The approaching A-wave filled the sensors. Tabitha had a fleeting thought, which faded in the time stream. Or maybe she was going to have a thought. Her augment selected the release switch for her. All she had to do was allow it. Ship seven released disassemblers.

"Eight! Release now!"

"I need to think," said Tabitha. She selected the emergency shutdown switch for the Takahara drive.

"Tabitha! What are you doing?"

She shut down.

SEVEN ANSIBLE-SPARKS CROSSED THE WAVE FRONT, TRAVELING FASTER than light, each was abruptly cut off from its command center on the rim, which had kept it from unraveling in time. As the Krii ship watched, parts of each ship regressed to before its completion date. Anti-matter containment fields needed to be tore-torn, contents streaming free to combine with normal matter.

TABITHA'S SHIP DROPPED INTO REAL TIME.

The wave passed through her. And for the first time since leaving solar orbit, she could think clearly. There was no touch of the Pulaski group mind, no update instructions from her augment. Tabitha sighed in relief.

She thought a message to the group mind: "I'm on the other side of the wave."

There was no answering thought, only peace and quiet. She heard her own restless breathing.

Stars shone all around, proof positive that she was in real-time. She saw sparkles of light that were not stars: dispersing clouds of matter and antimatter, annihilating each other atom by atom. Sensors showed the receding A-wave, still heading toward Sol.

In the other direction, something rushed toward her silently from the galactic core. In the blink of an eye, it sped past: a false image of the Stone Collector, light delayed. A minute later, another passed, and then another. Tabitha realized the alien drive was nothing like the Takahara drive. It dipped in and out of real time like a wave, leaving a long trail of ghosts behind.

"Let's see what you look like," she whispered.

Listening to Strauss's *Thus Spoke Zarathustra*, she played back the images in slow motion. The Stone Collector ship was tinier than she expected, perhaps fifty kilometers long. Whatever had happened to the ships of her fleet, they hadn't collided with it.

Tabitha studied the Stone Collector images carefully; there was still time to defeat it. She took a deep breath and consulted her augment.

TABITHA'S MOTHER WALKED — SOMETHING SHE WASN'T accustomed to doing — up to the front door of the Pulaski Institute and blinked in the flash of its ID scanner. The delicate fairy wings growing from her shoulders prevented her from wearing her jet pack. After waiting a few seconds, she pounded on the ornate iron doors with both fists.

The doors creaked apart a minute later. Her ex-husband stood before her.

"Where's my daughter?" she shouted.

He opened his mouth to speak, hesitated and swallowed. "I already told you, we don't think she survived. We lost contact with all the ships, and —"

"But you have her. She's part of the Pulaski mind. You have her and I don't!" She wiped away a tear that had started down one cheek.

He shook his head. "A group mind doesn't work that way. We work together, think together, but when one of us dies ..."

Her father appeared in the doorway.

"Pumpkin, you have to accept that she's gone. She tried her best and we —"

"Don't call me Pumpkin! I'm ninety-two years old and I won't be called Pumpkin anymore." She began to cry. "I told her. I told her to clone herself."

Her ex-husband reached out and pulled her toward him, hugging her.

"Ouch!" She winced. "Careful with my wings!"

TABITHA, SLOWLY GAINING ON THE STONE COLLECTOR, HAD REGRESSED to sixteen. The ansible transmissions from Earth were still blocked. But from the other direction, the computer she'd left behind sent update instructions via ansible to her augment and the nanomachines. She longed for a time when she could think, without the disorientation of time reversal and retrenching from her augment.

The trailing edge of the A-wave loomed before her. In her own voice, the computer left behind told her where the alien ship was, exactly when it was blinking in and out of real time.

"Can you scratch for fleas?" said Tabitha. She launched the first dissembler.

One by one, each time the Stone Collector dropped into real time, she released another, until there were no more.

She followed, sending ansible updates to the disassemblers.

THE MALFUNCTIONS WERE INSIGNIFICANT: A SENSOR FAILURE HERE, A minor hull breach there. Slowly they added up. By the time the Krii ship sought out a star system to mine raw materials for repairs, there were thousands of malfunctions. By the time it found a planet, there were millions.

Continued on page 85

Without the Voice, there came a choice. Klair hoped she had the strength to make the right one.

THE VOICE

BY GREGORY BENFORD
Illustration by Rick Berry

DON'T BELIEVE IT," QENT SAID STERNLY.

Klair tagged him down the musty old corridor. "Come on, turn off your Voice. Mine is — I showed you."

"Stuff on walls, whoever heard of —"

"There's another one further along."

Down the narrow, dimly lit hallway they went, to a recessed portion of the perimwall. "See — another sign."

"This? Some old mark. What's a 'sign' anyway?"

"This one says —" she shaped the letters to herself carefully — "PASSAGE DENIED."

Qent thumbed on his Voice impatiently. He blinked. "That's ... what the Voice says."

"See?"

"You've been here before and the Voice told you."

"I let you pick the corridor, remember? A fair trial."

"You cheated."

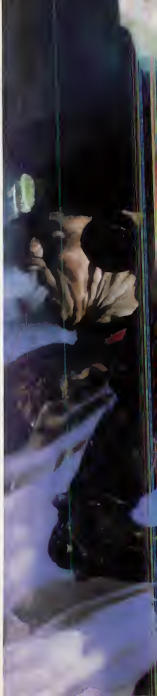
"No! I can read it." Read. The very sound of the word made her pulse thump.

Qent paused a second and she knew he was consulting the Voice again. "And 'read' means to untangle things, I see. This 'sign' tells you PASSAGE DENIED? How?"

"See those? — they're letters. I know each one — there are twenty-six, it takes a lot of work — and together they shape words."

"Nonsense," Qent said primly.

"Your mouth shapes words."





"It's a smart strategy. When the buzzards just get

"I have another way. My way."

He shook his head and she had to take him on to another sign and repeat the performance. He grimaced when the Voice told him that indeed, the markings meant ALDENTEN SECTOR. "A trick. Your Voice is on. You just rigged your touchpad —"

"Here, take my insert!" She thrust it into his hand and made him walk to the next emblem. "MANUFAC DIST, that way."

"I know an arrow when I see it," he said sarcastically. But the rest of it — what's DIST mean?"

She had hoped he wouldn't ask that. "Maybe it means a place."

"Like a neighborhood?"

"Could be — in fact, yes, 'district'. If there wasn't room to write it all out, they'd shorten a word."

"And who were 'they'? Some magicians?"

"The ancients, I guess."

He was working his way around to being convinced, she could see. "They left wall marks? What for, when the Voice —"

"Maybe they came before the Voice."

"But what possible use —"

"I learned all this from those old papers I uncovered in the Historical Section. They were called 'Bills of Lading' but there were enough words —"

"How do you know you can 'read' something? I mean, without checking with the Voice?"

"I know. The letters group together, you see — MANUFAC is just 'man' and this upturned letter is the sound 'you', and —"

"You're going too fast." He grimaced, obviously not liking this at all. He was a biology specialist and tolerated her interest in antiquity, but finally he said, "Okay, show me again. Not that I really believe this, but ..."

THEY SPENT THE NEXT FEW DAYS IN THE oldest precinct of the Historical Sector, searching out corridors that the Imperium had not gotten around to Voicing. Klair read him signs and he started picking up the method. Progress was slow; reading was hard. Letters, words, then working up to grasping how sentences and then paragraphs had their logic and rhythms, their clues about how to extract meaning.

Still, it wasn't as though he were some Deedee, after all. After a while she recalled from her Educational Specialty training that Deedees were actually officially called the Developmentally Delayed. So if someone had once taken just the first letters of both words, that was how they had gotten their name.

Everything went well between them and they got to like having their Voices off while they strolled through the antiquated hallways, making sense of the signs.

The Voice was always available if they needed it. Linkchips embedded near both ears could pick up the pervasive waves of CompCentral. They only had basic link, no frills but constant access. Like everybody, they had used the Voice more as time went on; it was so easy.

But reading gave them a touch of the past and some silence. It was a relief, really.

They had kept their Voices nearly always on. It was easy to get used to the Voice's silky advertisements that floated just within hear-

ing. You could pay the subscriber service for the Voice and have no ads, but none of their friends did; it was far too expensive. And anyway, the ads told you a lot about people. There was a really interesting one for sperm and egg donors to the gayles bank, a Meritocracy program to help preserve the Gay gene. It had zooner sonics and life histories and everything. You could amp it and hear a whole half-hour show if you wanted. For free, too. But most weren't anywhere near that good, so they were glad to be rid of them.

Reading, though, grew on them. There were advantages to reading old signs that the Voice didn't bother to translate. They showed off to a few friends but nobody believed they could really read the curious markings. It had to be some trick, for sure. Klair and Qent just smiled knowingly and dropped the subject.

Not that it was all good. At an old intersection Qent honored the GO signal by reading it, rather than listening to his Voice. The signal was off sync and he nearly got flattened by a roller car.

They debated whether to tell anyone in authority. After all, maybe nobody knew this.

"Umms, no," Qent said. "Look at it this way — carrion eaters rule the world, in their way. Because nobody cares. Nobody wants what they like."

"So we'd be fools to make other people like reading?"

"Demand rises, supplies fall. Suppose everybody wanted those old books you found?"

She had to admit it was a sobering possibility. The carrion-eater analogy came out of his biology training, and he couldn't resist adding, "It's a smart strategy. When times are tough on everybody, the buzzards just get more to eat."

The thought was so disgusting she decided to forget about the whole question.

They came to like strolling the byways of the Megapolis, ferreting out the antiquated secrets of the signs. Lovers often find their own rituals, and this was a particularly delectable one.

Outside one vaultway there were clearly marked instructions on how to spin a dial and get in. They had to work on it for quite a while but finally they made it work. The door swung open on primitive hinges and they walked into a musty set of rooms. Exploring them proved boring; just stacks of locked compartments, all without signs. Until a guard came in with a drawn zipper.

"How'd you kids get in here?"

"It was open, sir," Qent said. He had always been quick and Klair supposed his answer was technically correct. She had opened the door.

"How the hell — ? Well, get out. Out!"

He was confused and worried and hardly gave them more than a brief search. Qent asked to see the zipper, imitating a dunbo kid, and the guard brushed them off, still puzzled.

UNTIL THE VAULT SHE HAD NOT REALIZED THAT HER HARD-WON TRICK was anything more than a delicious secret. Klair was a scholarly type and enjoyed her hours of scanning over the decaying sheets she found in the Historical Sector's archives.

The first ones she learned were called "books" and there was even an entry in the Compendium about them. The Voice recited the entry to her in its soft tones, the ones she had chosen for her daily work. She used a more ornate voice for social matters and a crisp, precise one for directions. In normal life that was all anyone needed, a set of pleasing Voice agents.

times are tough on everybody, more to eat."

There was hardly any delay when she requested the book entry and the Voice told a marvelous tale. There were many kinds of books, including one called "novel." This meant new the Voice said. But the one novel Klair found in the dank, dark Antiquities Vault was obviously old, not new at all. Such confusions were inevitable in research, she realized.

Books were known also as books in some ancient sources, it said, in the confusing era when there were competing Voices. Not really even Voices, either, but whole different speech-methods, before Standard was discovered.

All that happened in the Narrow Age, as antiquarians termed it. A time of constrained modes, hopelessly linear and slow. People then were divided by their access to information. Thank goodness such divisive forces were now banished.

They now lived in the Emergent Age, of course. The Voice had emerged from the evolution of old style Intelligent Agents, on computers. Those would perform fetch-'em tasks. Gradually, people let their Agents do more and more. Agent merging led to more creativity, coming from the overlap of many voices, many threads in a society where all was open and clear to all, available through the Voice.

"What sop?" Qent said to this, and she sort of agreed. The Narrow Age sounded fascinating, with its books and reading. The tingling thrill of being able to add a year's worth of Voice talk in your hand, opening it to anywhere you chose, picking out lore at will — it captivated her.

Of course, she knew the Voice was superior. Instantly it could slip to any subject or even word you liked in any record. It would explain in private, sounding just like an enormously smart person speaking to you alone, in your head. Everybody had one and could access it with an internal signal.

She looked up the Voice itself in one of the old books. The words were hard to follow and she began to wish for some way to find out what they meant. Sounding them out was hard because, even when she knew the word, the mapping from letters to sounds followed irregular rules. "What's the point of that?" Qent asked often, but he kept at it with her.

The books said that the Voice had started as an aid to people called "illiterates" — and Klair was startled to find, consulting the Voice, that everybody was one. Except her and Qent, now.

Once, lots and lots of people could read. But as the Voice got easier to use, a certain cachet attached to using only the Voice. Independence from linear "print-slavery" became fashionable, then universal. After all, the Voice could pipe the data you needed on fast-flow, a kind of compressed speech that was as fast (or in fact, by that time, faster) as people could read.

Most people got their information by eye, anyway. In a restaurant, they ordered chicken by touching the drumstick icon, or fish by the fishstick icon. And of course most of their time they spent at entertainments, which had to be visual, tactile, smell-rich — sports, 3Ds, senses, a-morphs, realos.

She found it quite delicious to have an obscure, secret talent that none of her friends even guessed. She was going to have a party and show them all, but then she saw the big letters in the Boulevard of Aspiration, and things got complicated.

QENT SAID, "I MAKE IT TO BE —
SAVVY THIS? MEAT 1:30 @ Y"

Skeptically he eyed the poorly printed letters written in livid red on a blue wall.

"Somebody did that by hand," Klair marveled.

"Writing by yourself? How?"

"I hadn't thought anybody could. I mean, machines make letters, don't they?"

"You're the one read all those historical books. Printing machines gave way to Voice machines, you said."

Klair traced a hand over the misshapen letters. "It's like making a drawing, only you try to imitate a machine, see? Think of letters as little art objects."

"This isn't an art exhibit."

"No, it's a message. But maybe I can ..."

By luck she had in her side-sack her latest cherished discovery, a fat book called "Dictionary." It had many more words in it than the Voice, approximating and vernacular. Big words that nobody used any more, hadn't used for so long even the Voice didn't know them. It even told her that "Q" meant "at", but not why.

"Here," she pointed forcefully at the tiny little entry. "Meat is the flesh of an animal."

"Animals do that. I heard that people used to."

"Primitive!" she said scornfully.

"It may mean that in there, but it sounds like 'meet.'"

"Somebody made an error? Confusing the sound with another word?"

"Somebody wants people who can read the sign to meet them."

"Other readers."

"Where?" He frowned.

"It says 'Y'. That's not a word."

"Maybe it's an abbreviation, like that MANUPAC DIST?"

"No, too short."

He snapped his fingers. "Remember where the Avenue of Aspiration branches? You can look down on it from the balcony of the Renew building. From above, it looks like that letter."

"Let's be there, then."

THEY SHOWED UP, BUT NOBODY ELSE DID. INSTEAD, AT THE Y ANOTHER crude hand-lettered sign said

MEAT CORRIDOR 63, 1:30 TOMORROW, BLOCK 129

They went home and turned off their Voices and talked. Most couples silenced the Voice only during sex. This was merely polite, even though of course no other person could be sure it was off nowadays, what with the new neuroactivated models.

They went home and sped-read some ancient texts. There was a thick book titled *The Last of the Mathematicians* that Qent had seen on a senso. She read it — her speed was a lot higher than his — but it wasn't anything like the senso he had seen. There was no sex in it at all. Just stares of infinite longing and heavy breathing and pounding pulses and stuff like that. Still, she found it oddly stirring. Reading was funny that way.

They could not get their minds off the sign. Qent was out of sorts, irritated that others had mastered their discovery. He grouched about it vaguely and found excuses to change the subject.

Klair didn't see it possessively. After all, the higher moral good was to share. Reading was wickedly simple-ist. Was that why she liked it so much? A reader was isolated, listening to a voice no one else could take part in. That led to differences and divisions, friction and clashes.

Still, the rapture of reading — of listening to silent sounds from ages past — was too, well, perhaps the right word was titillating.

Once, lots and lots of people could to use, a certain cachet attached

She was excited by the prospect of other readers. Inevitably, they went to the site.

The man who slouched beside a runway was not impressive. Medium height, his crimson coddie was three years out of date. His hair was stringy and festooned with comically tattered microbirds. He said nothing, simply handed them a sheet. Miserably printed sentences covered both sides. The first paragraph was enough for Klair:

THE SECRET ASSEMBLY OF READERS MUST UNITE! WE HAVE A TALENT THE MASSES CANNOT UNDERSTAND. THEY WILL FEAR US IF THEY KNOW. A BROTHERHOOD AND SISTERHOOD OF READERS IS THE ONLY SOLUTION TO OUR ISOLATION. ARISE!

"What cliché was?" She thrust the sheet back at him.

"True, though."

Qent said sharply, "Just tell us what you —"

"You never know when the Voice is on," the man said mysteriously.

Klair said, "And your printing is awful."

"Better than yours," he said shrewdly.

"That's not the point," Qent said. "We demand to know —"

"Come on. And shut up, huh?"

THEY WERE IN A WILDERNESS PRESERVE BEFORE THE MAN SPOKE. "I'M Marq. No Voice pickups here, at least according to the flow charts."

"You're an engineer?" Klair asked, admiring the coils.

"I'm a philosopher. I make my money engineering."

"How long have you been reading?"

"Years. Started with some old manuals I found. Figured it out from scratch."

"So did we," Qent said. "It's hard, not being able to ask for help from the Voice."

Marq nodded. "I did. Dumb, huh?"

"What happened?"

"Some Spectors came by. Just casual talk, y'know, but I knew what they were after."

"Evidence?" she asked uneasily.

"When I asked the Voice there was a pause, just a little one. A priority shift. I know how to spot them. So I broke off and took the books I had to a hiding place. When I got back there were the Spectors, cool as you like, just kind of looking around my room."

"You didn't tell them ...?" she asked.

"You got to give them something. I had a copy of this thing about books that I couldn't understand, Centigrade 233. Kept it buried under a pseud-bush-bud. They were getting funny on me so I took it out and gave it to them."

She blinked, startled. "What did they do? Arrest you?"

Marq gave her a crooked grin. "Reading's not illegal, y'know. Just anti, that's all. So they let me off with six weeks of grouping."

"Wow, do I hate those," Qent said.

Marq shrugged. "I did the time. They poked at me and I had to pretend to see the light and all. They kept the book."

"You're brave," Klair said.

"Just stupid. I should never have asked the Voice."

Qent said earnestly, "You'd think the Voice would encourage us to learn. I mean, it'd be useful in emergencies. Say the Voice goes down, we could read the info we'd need."

Marq nodded. "I figure the Voice reads. It just doesn't want competition."

She said, "The Voice is a machine."

"So?" Marq shrugged again. "Who knows how smart it is?"

"It's a service," Qent said. "That's all."

"Notice how it won't store what we say?" Marq smiled shrewdly.

Qent nodded. "It says it's trying to improve our memories."

"Reading was invented to replace memory," Klair said. "I read it in a history book."

"So it must be true?" Marq shrugged derisively, a gesture that was beginning to irk Klair a lot.

She hated politics and this was starting to sound like that. "How many books have you got?"

"Lots. I found a tunnel into a vault. I can go there anytime."

Qent and Klair gasped at his audacity as he described how for years he had burrowed into sealed-off chambers, many rich in decaying documents and bound volumes. He spoke of erotica they had never seen, tomes which were nothing but names in the Dictionary: Encyclopedias, Thesauruses, Atlases, Almanacs. He had read whole volumes of the fabled Britannica!

Would he trade? Lend? "Of course," Marq said warmly.

Their friendship began that way, a bit edgy and cautious at the margins, but dominated by the skill and secret lore they shared. Three years of clandestine reading followed before Marq disappeared.

H

HE WASN'T AT ANY OF THEIR USUAL meeting places. After all this time, they still did not know where he lived, or where his hoard of books might be. Marq was secretive. They searched the sprawling corridors of the complexes, but were afraid to ask the Voice for any info on him.

The Majority Games were on then so the streets were more crowded than usual. Most people were out all the time, excited and eager and happy to be in the great mobs that thronged the squares. The Games took up everybody's time — except, of course, the three hours of work everyone had to put in, no exceptions, every labor-day. Klair and Qent broke up to cover more ground and spent a full week on the search. Many times Klair blamed himself for not pressing Marq about where he lived, but the man was obsessively secretive. "Suppose they grab you, make you tell about me?" he had always countered.

Now she wondered what the Spectors would do if they uncovered a lode of books like Marq's. Send him to Advanced Treatment? Or was there something even worse?

She came home after a day of dogged searching and Qent was not there. He did not appear that evening. When she awoke the next morning she burst into tears. He was gone that day and the one after.

On her way back from work, a routine counseling job, she resolved to go to the Spector. She halfheartedly watched the crowds, hoping to see Marq or Qent, and that was how she noticed that three men and a woman were moving parallel to her as she crossed the Plaza of Promise. They were all looking some other way but they formed four points of the compass around her with practiced precision.

She walked faster and they did too. They looked stern and remorseless and she could not lose them in the warrens of streets and corri-

read. But as the Voice got easier to using only the Voice.

does near the two-room apartment she shared with Gent. They had waited five years to get one with a tiny balcony. Even then it was just two levels up from the muddy floor of the air shaft. But if you hooked your head over to the side you could see some sky that way.

Klaire kept moving in an aimless pattern and they followed. Of course she did not want to go to the apartment, where she would be trapped. But she was tired and she could not think of anything else to do.

They knocked a few minutes after she collapsed on the bed. She had hoped they might hold off for a while. She was resigned. When she span the door open the person she least expected to see was Marq.

"You won't believe what's going on," he said, brushing past her.

"What? Where have you —"

"The Meritocrats want us."

"For what?"

"Reading!"

"But the Voice —"

"Keeps people out of touch and happy. Great idea — but it turns out you can't run everything with just the Voice." He blinked, the merest hesitation. "Somebody's got to be able to access info at a higher level. That was our gut feeling, remember — that reading was different."

"Well, yes, but the Spectors —"

"They keep people damped down, is all." A slight pause. "Anybody who's got the savvy to see the signs, the grit to learn to piece together words on their own, to process it all — those are the people the Merits want. Us!"

Klaire blinched. This was too much to encompass. "But why did they take you away, and Gent —"

"Had to be sure." He gave his old familiar shrug. "Wanted to test our skills, make sure we weren't just posing. People might catch on, only pretend to read, y'know?"

"I ... see." There was something about Marq that wasn't right. He had never had these pauses before ... because he wasn't listening to the Voice then?

She backed away from him. "That's marvelous news. When will Gent be back?"

"Oh, soon, soon." He advanced and she backed out onto the balcony.

"So what job will you do? I mean, with reading in it?"

They were outside. She backed into the railing. The usual distant clatter and chat of the air shaft gave her a momentary sense of security. Nothing could happen here, could it?

"Oh, plenty. Looking up old stuff, comparing, y'know." He waved his hands vaguely.

It wasn't much of a drop from here. Over the railing, legs set right ...

"It's good work, really."

Could she could get away if she jumped? Marq wasn't the athletic type and she knew that if she landed right on the mud below she wouldn't twist an ankle or anything. She had on sensible shoes. She could elude him. If she landed right.

She gave him a quick, searching look. Had he come here alone? No, probably there were Spectors outside her door, just waiting for him to talk her into surrendering. Stall for time, yes.

"How bad is it?"

He grinned. "You won't mind. They just access that part of your

mind for three hours a day. Then they install a shutdown on that cerebral sector."

"Shutdown? I —"

"So you don't need to read any more. Just during work, is all. You get all you need that way. Then you're free!"

She thought it through. Jump, get away. Couldn't use the Voice for help because they could undoubtedly track her if she had her receiver on. Could she get by just reading the old signs?

Suppose she could. Then what? Find some friends she could trust. Stay underground? How? Living off what?

"It's much better. Gent will be back soon and —"

"Hold it. Don't move."

She looked down the air shaft. Was the jump worth it?

YOU SPOOL OUT OF THE ILLUSION AND SNAP — BACK INTO THE TIGHT cocoon. The automatic sensory leads retract, giving your skin momentary pinprick goodbye kisses. Once more you feel the cool clasping surfaces of the cocoon. Now you turn and ask, "Hey, where's the rest?"

Myrph shrugs her shoulders, still busy undoing her leads. "That's all there was, I told you."

"Maybe it's just damaged?"

"No, that's the end of the cube. There must be another cube to finish the story, but this was the only one I found back in that closet."

"But how does it end? What's she do?" You lean toward her, hoping maybe she's just teasing.

"I dunno. What would you do? Jump?"

You blink, not ready for the question. "Uh, this reading thing. What is it, really?"

Myrph frowns. "It felt like a kind of your own silent voice inside your head."

"Is it real? I mean, does reading exist?"

"Never heard of it."

"So this isn't an historical at all, right? It's a fantasy."

"Must be. I've never seen those things on walls."

"Signs, she called them." You think back. "They would have worn away a long time ago, anyway."

"I guess. Felt kinda strange, didn't it, being able to find out things without the Voice?"

You bite your lip, thinking. Already the illusion of being that woman is slipping away, hard to fix in memory. She did have a kind of power all on her own with that reading thing. You liked that. "I wonder what she did?"

"Hey, it's just a story."

"What would you do?"

"I don't have to decide. It's just a story."

"But why tell it then?"

Myrph says irritably. "It's just an old illusion, missing a cube."

"Maybe there was only one."

"Look, I want illusions to take me away, not stress me out."

You remember the power of it. "Can I have it, then?"

"The cube? Sure."

Myrph tosses it over. It is curiously heavy, translucent and chipped with rounded corners. You cup it in your hand and like the weight of it.

That is how it starts. You know already that you will go and look for the signs in the corridors and that for good or ill something new has come into your world and will now never leave it. □

Evan Borik thought that he had escaped from the prison planet of his birth. He was about to learn that the universe held more than one type of prison.

BROOKS' GHOST

BY MARK W. TIEDEMANN

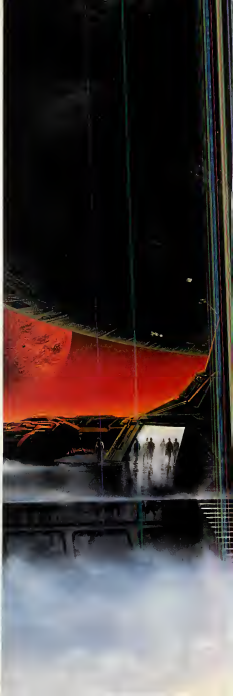
Illustration by Luis Royo

Tacitus,

SPACE AND THE DESERT ARE DIFFERENT, but the same. Clean and empty until you give them third, fourth, or fifth glances. Until you give them your attention. Then you see the details, the clutter, the essential eruptions of variation that inform both environments with texture and memorable qualities. All deserts are different.

Evan Borik stares out at the desert, thinking about this and how much he wants to be elsewhere. He never wanted to come back, his whole life has been spent leaving Petersgate, but here he is, brought back to answer questions to which he himself does not want to know the answers. The stippled variety of the great Petersgate Desert spreads out to the horizon beneath a thin, indecisive blue sky. The clouds are feathery brush strokes, clear sign of the ongoing ecologic adaptation project. The ground is grey and beige, detailed like an ancient painting by Seurat, with stones, patches of lichenite, algal analogues, a kind of sporulating fungus that resembles coprolites; cracks, holes, small ravines, fissures, extrusions of basaltic rock, drifting dunes that look like huge, headless serpents slithering over the landscape. Dragons, Evan thinks. He's seen dragons, though never here. Petersgate is a largely empty world, emptier now in the aftermath of all the killing.

He glances involuntarily at the Armada marine transports that huddle off to the left of the other vehicles that form a rough crescent. Grey uniforms lounge against their machines, weapons held with deceptive carelessness. It is easy to believe in their power, especially





after what they did to all the townships. The rebellion is over, the riots are past. The Armada stopped the fighting. They left little standing. There's nothing to guard against anymore — not out in the desert anyway — but they are here all the same. Nothing now happens on Petersgate without military involvement.

He looks away, along the array of carriers. They face the blunt entrance tunnel to the prison. The low dome rises up forming a wall against the sky. It is one hundred kilometers in diameter, one hundred fifty meters high at the center, a drab milky-blue, smeared by drifts of sand. You could almost mistake it for a natural formation, a volcanic blister on the skin of the planet, but for the seventy meter long entrance tunnel. Evan tries not to look at it, but its presence is insistent, enormous and unavoidable. Terminal City.

A small group of people cluster around a tripod-mounted machine at the foot of the thirty-meter tall doors. Since the rebellion the prison has been sealed, the normal accesses useless. Evan hopes it continues to resist their prying, but knows this is unlikely. These are Corovais, the people who built the damn thing under contract to begin with, brought in now by the Armada and the Forum to do exactly this — break into their own prison.

"Devil's Island."

Evan looks over at the young girl, Teryl Corovais. They are alone on the transport platform. She leans on the railing, staring at the prison. She looks much like the rest of her family: long, braided copper hair, slender body, high cheekbones in a face made sad by large hazel eyes.

He has noticed, though, that she avoids the others whenever possible, keeping to herself or talking to the marines.

"Pardon, Co Corovais?" Evan says.

"Devil's Island. It was sixteen kilometers from the mainland, thousands from the state that used it as a prison. Many of the ones Broca's theories said were incorrigible were sent there, the ones nineteenth century science said were innately criminal. Still wasn't far enough away. It disturbed people. Eventually it was shut down and became a resort for wealthy tourists." She looks at him. "Do you think you didn't build it far enough away? I mean, five hundred kilometers from Paxxon — it's a considerable distance now, but in three or four more generations your growth rate would carry settlements out this far."

"The plan was to settle in the opposite direction."

"Then it might have taken two centuries before urban encroachment absorbed it?"

"We thought four."

She frowns thoughtfully. "Then what?"

Evan only shakes his head. He is grateful when she shrugs and turns and attention back to the prison. Suddenly, though, she faces him and says, "My questions irritate you."

"In truth, everything irritates me. I don't really want to be here."

"I haven't been given a good explanation yet."

"Of what?"

"Your rebellion."

"Not my rebellion. I left."

"Semantics. The Petersgate Rebellion, then."

"What's to explain. We disagreed with each other. Violently."

"Over what?"

Evan points. "That."

She looks at the dome. "But —"

"Please excuse me," Evan says, standing. He goes to the ramp and walks quickly down to the ground and toward the group at the doors. He notices a couple of marines watch him, their hands shifting slightly on their rifles. Evan feels a laugh coming on. To them, every Petersgate is a terrorist, no one on the planet, native-born, can be trusted. But they've been told to trust him, so there's a basic conflict for them to cope with. He suppresses the laugh and tries to ignore them.

Five people stand around the platform. Two are Armada officers: Major Mabros and his aide. The others are Corovais, one by employ, their head of security.

Old Dieter scowls alternately at the doors, the machine, the two Armada officers, and now at Evan.

Ren Corovais operates the platform. Her fingertips press against the interface panel. Her head drifts from side to side, almost lolling,

eyeballs fluttering. She is deep in the flow, connected directly to the prison datasphere, at least what is left of it. Sometimes she seems about to fall, but always recovers her balance. Evan sees the same lines in her face as in Teryl, less so in Old Dieter.

"Try subtler levels," Old Dieter says. "Or let me try."

Ren's eyes focus briefly, and she looks at Old Dieter. "When I run out of options I'll let you know."

Old Dieter glares, then shrugs. "Just trying to be useful."

Ren lets herself sink back into the flow. Evan unconsciously rubs his own fingertips together. He has no caps, no link, no way to do what Ren is doing. He has always wanted an interface — it was one reason he left Petersgate — but they are expensive and limited. Only a few Petersgaters ever had them, most of them diplomats who regularly travelled off world. For everyone else they were illegal.

Old Dieter looks at Evan. "You changed things," he says. "This should have been done an hour ago. You added routines."

"Not me," Evan says. "I haven't been here in five years."

"Your people. Same difference." Old Dieter snorts in disgust. "We built you a perfectly good prison, there was no need to meddle with it."

Before Evan can answer the air is filled with grinding thunder. He looks up in time to see the doors begin to part, slide back in tracks. He can feel it through his feet. Sand drifts down like snow from atop the entrance arch; the seam empties itself and widens. Finally the doors stop, the noise stops.



THE SUNLIGHT REFLECTED OFF THE NEAR-WHITE sand pushes into the tunnel, but fails to reach the far end. Near the opening the overarching ribwork is visible and between each support runs a length of walkway. Down the very center is a trough two meters wide and fifteen deep. About ten meters in, a mesh gate blocks entry to the trough. Stairs lead up from the staging area to the walkways.

Major Mabros gives a signal. Two troop transports move into the staging area and marines spill out of them and up the stairs. The thin sounds of their boots echo out of the tunnel. Evan waits for the sharp sound of energy pulse weapons, but after a few minutes he knows that Ren Corovais has disarmed the automated security as well. Major Mabros's aide listens to his comm and finally nods.

"All clear," Major Mabros says.

More marines move into the tunnel. Ren Corovais pulls out of the link, rubs her eyes, and gives quick, whispered instructions to her security man, who nods and walks away, talking into his own comm. Suddenly transports are moving, people scurrying about. Evan looks around, momentarily excited by the purpose implicit in all the motion.

Ren closes the lid on her panel and retracts the legs. She slings the strap over her shoulder and gazes into the tunnel. She smiles wanly, looking very tired.

"Some interesting wrinkles," she says. "It's a jumbled mess, though. I don't understand why you found it necessary to program it to crash itself. For that matter, I don't see why you found it necessary to change it at all. The original security program was more than adequate."

"I had nothing to do with the decision," Evan says defensively.

"Of course," she shrugs. "At least there was enough left to work with."

"No lights?" Major Mabros asks, scowling.

"Getting the doors open was difficult enough from a remote," Ren says.

Major Mabros nods curtly, then turns to speak to his aide in clipped milicoode syllables. Evan gazes up into the cavernous mouth, a clammy knot in his chest.

"Let's see what else you changed," Ren Corovais says and walks on toward the entrance before he can reply. Resentful, he follows at a discreet distance.

Lamp beams dance over the surfaces within, cut through the dust all the boots have stirred into the air. At the end of the tunnel, stairs lead up from the walkways above the trough to wide doors. Another Corovais is working on the locking mechanism on the

northern door. Evan looks across the trough to the southern side, which is a mirror-image of this one, and sees marines setting up halogens along the walkway.

"There."

The door slides open with a sound like fabric on skin. Three marines, helmet lamps on, duck through, weapons ready. Evan wants to laugh. It seems they have shot up everything else on Petersgate and now they're looking for more. A few moments later one of them comes back and announces all clear in a quiet voice.

In the profusion of lamps, Evan sees the room is an assembly of brief pictures — wall of monitors, a long console, chairs at separate stations, a weapons locker, a bulletin board. Ren and the other Corovais bend over the console, studying it. She finds an interface panel and presses fingertips to its dark surface. She shakes her head, scowling, and continues searching. One of the others flips a series of switches, but nothing happens.

"Dead," someone says.

Ren looks around, finds Evan. "Well?"

"Well what?" he snaps back. He notices Major Mabros give him a disapproving look. "I've never been here before, Co Corovais."

"You were Paxton's city warden," Ren says.

"My office was in Paxton, not here. When I left Petersgate, Vol Massin was warden here. I have no way of knowing —"

"You were in charge of shipping prisoners here," Major Mabros says, loudly. His troops look at him, surprised, and for a moment he is bathed in lamp light. "You mean to say your duties never entailed a visit?"

"No, they never did. I know it's hard for you to believe, Major, but I left Petersgate because I did not approve of this place. I had no desire to come see it and my duties never made it necessary. I was only city warden for a year."

"If you didn't approve, why did you hold the post for so long?" Ren asked.

"It was necessary in order to qualify for a position elsewhere."

Major Mabros grunted. "All right, we need light in here. Sergeant—"

Evan watches the marines and the Corovais move from task to task and leans against the wall, his arms tightly folded over his chest. He wishes they would stop asking him questions. He has long since stopped volunteering information. Either they find it irrelevant or they don't believe him. He is not part of this, not anymore. It is difficult to explain to people how Petersgate had become a burden to itself, how the urgency for perfection had transformed every action of every day into a demonstration of loyalty. They were suffocating under their ideals, unable to reach the free air because this place, this prison, chained them to their own brutality. Evan thinks about all this, and again knows that he was right to try to leave. The prisoners who went into this facility would never conform to society, but Petersgate had conformed to the prison. So Evan had felt, he and many others. Many who openly dissented and ended up here. The duty of every prisoner is to try to escape and Evan had done that. He hadn't wanted to come back to Petersgate, ever, but he admits to a perverse curiosity that made the demand easier to accept. Revolution has taken his home. What is that like? What will it accomplish?

"Mare Tranquillitatus."

Evan jerks aside at the voice, so close. Teryl Corovais stands just inside the doorway, hands clasped behind her.

"What?"

"Mare Tranquillitatus. The first facility off Earth. I thought it was peculiar that they placed it in the Sea of Tranquility. But then I found out that when the American penitentiary system was first established many of them were modeled on Auburn and Cherry Hill. They practiced Quietism, the idea that prisoners must be kept quiet so that the social influences that initially caused them to be antisocial would vanish. Cherry Hill kept each prisoner completely isolated from all the rest. Perpetual solitary confinement. Prisons were very still, very quiet, tranquil. The historian Tocqueville toiled some of them. He was very impressed. He said, 'We have often trod during night those monotonous and dim galleries, where a lamp is always burning: we felt as if we traversed catacombs; there were a thousand living beings, and yet it was a desert solitude.' Nice. I imagine

no one said anything so eloquent about this place, did they?"



THE COROVAIS HAVE FINALLY BEGUN TO IGNORE him. He has no answers for them now, they are deep into trying to restart the internal systems. He wanders out onto the walkway and stares down the length of the admission trough.

There is no trace of the prison guard compliment. They were never really needed, Evan never understood why the post existed, but when he left there was a staff of twenty-five. Transports are missing from the motor pool. Clearly they left at the first opportunity to abandon the facility. Evan sympathizes. He

cannot imagine working here, day on day.

Major Mabros and Ren Corovais come out onto the walkway.

"Co Corovais," Major Mabros says, "how is this set up? What's the function of this design?"

"The prisoner," she explains, "is taken out of the transport back there at the staging area and sent through that inner gate. At the other end, down here, is the processing center. Fully automated. In the unlikely event a prisoner scales these walls, there are several e.p. emplacements to knock them back down. In the processing center, scans are made, new clothing issued, final instructions given, and a third door opens to the release chamber, which encircles the interior. The prisoner can exit the ring at any point."

"What if they don't exit?"

"You mean if they try to stay inside the ring? There's a flushing system, herds them along from section to section."

"Mmm. And how did one gain release?"

"There is silence for a time and finally Evan looks at them. Ren and Major Mabros are looking at him, waiting for an answer.

"One didn't," he says. "This is the Petersgate Center for Social Irremediability. No one ever gained release from here. Sentence here was sentence for life, no reprieve. Even if we'd wanted to, there was no way to get someone out."

"Is that where the nickname came from?" Major Mabros asks.

"This is Terminal City."

"Is that how you designed it, Co Corovais?"

"No. Our design incorporated release mechanisms."

"So where are they?"

Ren shakes her head. "They've been removed."

"Charon," Teryl says, "housed two dozen people who were considered irremediable, dangers not only to society at large but also to the general prison population. They'd been transferred from maximum security facilities all over the Sol System. Tranquillitatus, Noctis Labyrinthus, Eclatulus, Miranda, Hermes Darkside ... two dozen people who couldn't be near anybody. Charon returned to the rule of silence from two and a half centuries earlier. No one knows if Charon was ever closed down. I couldn't find that out. Who did you put in here, Co Borik?"

"You don't know? I'm amazed. I wouldn't think that would be so difficult to find out."

"Someone trashed your penal datasphere before the final Armada assault."

Evan is startled.

"Hm," Major Mabros grunts. "Interesting."

HALOGENS CAST ALMOST SHADOWLESS ILLUMINATION IN THE CONTROL center. The monitors are all dead, though, and nothing responds on the consoles. One of the Corovais is lying on his back, peering up into the guts of one of the stations, scowling. Beside him is a powerpack he is trying to connect to the system.

"I'm not sure I see the point," Evan says to no one in particular. One of the marines glances at him. A Corovais looks up. No one responds, so he shrugs.

"There's no power to anything," the Corovais stretched on the floor complains. He makes another connection from the powerpack and suddenly sections of the console flicker.

"There were only seven prisoners," Teryl says, "in the Bastille, in Paris, when the mob stormed it."

Major Mabros looks at her, frowning. "Then why did they storm it?" Teryl shrugs and looks at Evan. He feels himself flush with anger.

"Why ask me?"

"Seems like an interesting parallel."

"I wasn't here. I left."

"You were here when they built it."

"I was fifteen when they built it."

"You became city warden —"

"I told you, to get a position elsewhere." He glares at her, then at Major Mabros. "You're military. Don't you people have steps you have to take to get from one position to another, go up the ranks?" When Major Mabros looks away, Evan turns to Teryl. "I disappeared. I left Petersburg. You've dragged me here to explain things to you that I can't explain."

"You said the rebellion happened over this place," she says evenly. "It was one factor."

"Social irremediability ...," Major Mabros muses. "What exactly does that mean?"

"Just what it says. No remedy. Incompatible. Incurable." Evan blows out a lungful of air, suddenly angry. "Petersgate wanted to do away with crime, Major. When it was founded they tried to order it in such a way that everyone would be incorporated into society usefully. Everyone would have a purpose in life, there would be work, resources, everything one could want or need, nothing to cause the kinds of social eryl we believed caused antisocial behavior in the past. Perfect. Hospices would treat anyone with adjustment problems."

"Very utopian," Major Mabros says dryly.

"You mean naïve. I agree. But that was fifty-eight years ago and a lot of the founders are dead — maybe all of them now. There's no way to know how many of them really believed it could be done. All I know is that when it turned out that it couldn't, Petersgate built prisons, just like everywhere else. It's all a question of tolerance, isn't it? Then, when I was a boy, they built this place." He grunts. "Oh, they must have been angry. Bitterly angry. In spite of the best intentions of the founders and everybody else, Petersgate had criminals. Just like everybody else. They must have been deeply disappointed. Didn't these people realize? Didn't they appreciate the work and good will expressed by the Petersgate ideal? What was wrong with them? Couldn't they see that they had it better here than anywhere else?"

"Evidently not," Major Mabros says.

"Evidently. But we're reasonable people here, we believe that nothing happens without cause. So there must be an answer. There had to be something we could point to that would explain." Evan stares at his fists, knuckles white, resting on his knees. "In the meantime something has to be done. They have to be gotten out of society. The ones who had been in other facilities, been through rehabilitation, and still failed to live up to the Petersgate ideal. Their failure was our failure, but we never questioned our part in it. The ideal was the important thing. We couldn't risk the ideal. So we commissioned the Corvais to build this facility."

"We didn't build this, though," Ren Corvais points out. "You altered what we built."

Evan looks up at her. He sees then that everyone is looking at him, listening. "I keep telling you I didn't —"

Teryl touches his arm lightly and he stops. She shakes her head.

"You keep saying 'we,' Co Borik."

Evan leans his head back against the wall. "Yes. Well, maybe there's something to it after all." He looks at Ren Corvais, who frowns back at him. "You built us the best prison you could, Co Corvais. All we did — in our own humble way — was perfect it. We never thought we were imprisoning ourselves."

Old Dieter shakes his head, scowling, while the technicians give their reports. Evan stops listening half way through. Everything is fused, melted down. They will have to bring in all new equipment, tear everything out, and try to rebuild from scratch. There is no guar-

antee, though, that the embedded systems inside the prison area will work. Evan thinks it likely that everything is ruined.

HE STEPS OUT OF THE CONTROL ROOM AND looks down the length of the tunnel. It's night and the entrance is dark. For an instant Evan imagines that the doors have rolled shut and they are all trapped. He starts down the walkway toward the arch, expecting to be stopped by a marine. But he reaches the end unchallenged and stops at the stairs and looks back toward the pools of halogens. The bright lights cast overlapping clouds, like an explosion caught midway and frozen.

Cool desert air tousles his hair. He descends the stairs and walks out into the night.

Immediately he feels better, lighter, and his stride lengthens. Transports form enclaves of their own, camp lights glowing among them. Evan hears voices, hushed, intimate; laughter bursts out loudly once, startling him, but no one calls to him, no one seems to notice. He keeps walking, suddenly energetic, anxious the way he remembers as a child when he stole something and was on his way to an escape, certain any moment that someone would catch him, hoping that he could reach the safety of "outside" where he could disappear into a crowd or make his way to a place no one would think to search. Heart hammering, he feels now like that boy, on the verge of freedom, a prize hidden within his shirt or jacket, a private knowledge that he had gotten away, beaten their scrutiny, defied the rules.

He passes the unmarked boundary the Armad vehicles imply by their positions and feels himself grin in delight. He picks up his pace, breaks into a trot, and puts more distance between himself and the prison.

He tops a rise and the ground slopes gently down. He crouches and looks back. The encampment is two hundred meters away now. The prison itself is a vast shell slicing off the stars at the horizon, the only relief in its surface the dim outline of the access tunnel. In the opposite direction the desert is a pale fog, silvered beneath the Milky Way that crosses the sky almost directly above. Petersgate has no moon, only the stations orbiting beyond the ring of satellites. If he tries, Evan can pick them out, even against the crowded background of stars.

A sharp, breathy sneeze breaks the stillness and Evan drops to the ground. He lies still, wishing his heart would slow down, and stares. Off to his left he sees a smudge against the sand, but he waits till it moves. Another sneeze and the smudge shifts position. Evan crawls forward.

"Damn," someone says and sneezes again. Evan recognizes the voice — Teryl Corvais — and pushes himself back to his feet.

"Histamine triggers," he says and she jumps to her feet. Evan feels guilty. "Allergic reaction. There's a lot of plant life out here. It only looks empty."

"Co Borik ..."

"I didn't mean to disturb you ..."

She sits back down and says nothing. A low hum stops then, causing Evan to notice it for the first time, only by its sudden absence.

"No one's alive in there," she says. "Are they?" When Evan doesn't answer, she continues. "Ren found a security net a little while ago. Automatic response, set to activate in case of a breach from inside. It was military, Major Mabros recognized it, used primarily for securing perimeters of highly sensitive facilities. The kind of places people feel it better to destroy than to let be discovered by — well, by anyone else. Clever. In the event of any attempt to escape, the entire prison population would be killed. The trouble is, we can't tell what was set to go off. Biologicals? Fissionables? Aerobic inhibitors? The most efficient would be a neutron burst. Short-lived, fairly clean, minimum destruction to the actual facility. Of course, it would be very difficult to shield against that. I mean, detection would be easier than with, say, toxins. Makes things hard. We don't know whether to open it up or leave it shut. What would you suggest?"

"I would leave it shut."

"Mm. Of course."

Evan hears the hum again and looks back toward the prison. Teryl sneezes. Evan sees a dim light in her hand for a moment, then it is gone.

"Dieter says we're blameless. He says all we do is build the facilities. How they're used or misused is no concern of ours. He's not very convincing, though. He's really upset about this." In the darkness Evan sees her hold up her fist and turn it over slowly, studying it. He can't tell if she is holding anything or not, nor can he see her face. "Bistamine trigger," she says. "That's clever."

Evan shivers. Now that he's not moving, not compelled by forgotten ambitions, he feels the cold air, thin and aspic. He glances back over his shoulder, but cannot see the prison over the hum of sand behind them.

"We should go back," he says.

"We can't," she whispers.

"What?"

Teryl's head moves and Evan imagines she is shaking it. Suddenly she looks at him.

"Do you believe in free will?"

"What?"

"Do you believe you can determine your own future?"

"Well ... not exactly, no, but we can make choices."

"Close enough. If you could do anything, what would it be? Any choice?"

"I—" Evan coughs. "No one ever asked before."

"I'm asking. I'm curious."

"Well ... I always wanted to be linked. I hoped one day to get implants to enter the flow. Like yours."

She's quiet for a time. Evan is about to suggest they return when she says, "Have you tried?"

"No. It's expensive. It was illegal here. That's one reason I left. But I haven't saved enough yet."

"Don't. You can't. They have to be installed when you're a child, so you can grow into it. Adult amendments don't work right." She laughs. "Youth is destiny."

EVAN WANTS TO LEAVE, BUT INERTIA KEEPS him in place, waiting for her to move first or send him away. Teryl disturbs him—all the Corovais do, but Teryl most of all—because she fits no easy category of age and experience for him. She seems to know so much and yet it strikes him that she does nothing with it. In fact, she tries to avoid doing anything, as if she wants nothing to do with anything around her. A waste, he thinks. He tells himself it is because of the link, that access to that much information, that much wisdom—he thinks of it as wisdom, all that combined advice and observation and, he imagines, truth—distorts the normal progress of maturity. He thinks perhaps she is lying about the implants, at the same time he knows she is not.

"What else?" she asks.

"I don't know. Everything else depended on my leaving Petersburg."

"Did you think being here prevented you from having dreams?"

Evan rubs his hands together nervously. He feels angry again. He resents her, resents the questions, resents even more the absence of answers. He sighs heavily, the air whistling from his nose. His lungs are laboring. It's time to go back, he thinks, but still he sits, resenting the night and the girl beside him.

"They built that," he says, jerking a thumb over his shoulder, "and the whole planet became a prison." He hangs his head, startled at the words, troubled by how correct they sound. But he had felt it all his life, the growing brutality from a response to something all Petersburg had wanted to deny. They were obsessed with the problem and everything turned in one way or another to concentrate on it, to finding an answer, and the only answer they could find was to throw away freedom.

"So you escaped," Teryl says. "Makes sense. Except —"

"Except?"

"Well ... you made it so you couldn't escape." She stands, shakily,

and for a few seconds Evan expects her to fall. "Prisons are personal. I know, my family builds them." She sighs. "You want implants ... here. You can have mine." She leans over him and drops something into his lap, then staggers up the slope and disappears over the crest.

Evan stares down at the sand between his legs at the small dark lumps. He picks one up. It's soft, pliant. A finger.

He sucks air through his mouth, pushing himself back from the pile. Among the stubs is a longer object and he picks it up. A surgical laser, a script. Pulse throbbing, he scoops it all up and runs over the rise.

"Wait!" he calls and sprints toward the shadows and the pale lights. He cannot see her. His lungs heave and he feels lightheaded, dizzy, but he runs on.

At the perimeter a shadow steps in front of him. He tries to dodge it, but something hits his chest and he feels himself spin around, feels the ground slap him, hard, feels the world whip through his brain, feels his thoughts scatter across the sand along with the fingers and the laser.

"Damn it, what did you do?"

"Nothing," he says. Then he feels the first kick in his side and he says no more.

HE SITS IN THE MOBILE INFIRMARY, UNABLE TO FIND A POSITION in which his ribs do not ache. Dawn smears the horizon. The doors are open to the desert, for which he is grateful.

Across from him, Teryl lies in a medical cocoon. Her hand is swathed in biogel, but she is in shock and slightly delirious. At times she recites statistics about other prisons, then lapses back into unconsciousness.

Old Dieter climbs into the van and stares at her for a time. Then he shrugs and looks at Evan.

"Fourth time," he says. "Can't figure it out."

"No?"

"No."

"Have you asked her?"

"Often."

"What does she say?"

Old Dieter scowls. "We pierced the inner wall with a probe. So far we haven't found anything. It looks like we can open it up and clean it out." For a moment Evan is confused.

"You should've left it alone," Old Dieter continues. "It was a perfectly good facility when we built it. You should have left it alone."

"I agree."

"Then —" Old Dieter closes his mouth.

"You're going to put me in there, aren't you?" Evan asks. "With the others who escaped."

"You said no one ever escaped."

"So I did."

Old Dieter stares at him, then grunts and leaves.

"... Soviet galags held the insane ..."

Evan stares at Teryl.

"... insanity was any desire to be free ... the desire to leave the galag demonstrated insanity ... the only thing to do to escape was to want to stay in prison ... and they'd let you do that ... you were where you wanted to be ... so you were free ..."

She swallows loudly and Evan sees the whites of her eyes. The machine is growing new fingers. Later the implant caps will be inserted. He envies her. Prisons are all the same, he thinks, until you give them third, fourth, or fifth glances. Until you give them your attention. Then you see details, the chatter, the essential eruptions of variation that inform the environments with texture and memorable qualities. All prisons are different.

He feels like a child who has just comprehended a secret, learned something occult, discovered a truth about adults, and thinks he will find power in the knowledge. He stares out the door of the van at the desert and thinks about this and how much he wants and how much he will never have.

"IF WE MUST DIE, WE CAN AT LEAST BE SURE THE GUILTY WILL BE punished."

Tacitus, *The Annals* □

THE FIREFLY TREE

BY JACK WILLIAMSON

Illustration by Laurie Harden

The tree tickled the sky, sizzled with a strange new life, and told him that there was a place where things could be better.

THEY HAD COME back to live on the old farm where his grandfather was born. His father loved it, but he felt lonely for his friends in the city.

Cattle sometimes grazed through the barren sandhills beyond the barbed wire fences, but there were no neighbors. He found no friends except the firefly tree.

It grew in the old fruit orchard his grandfather had planted below the house. His mouth watered for the ripe apples and peaches and pears he expected, but when he saw the trees they were all dead or dying. They bore no fruit.

With no friends at all, he stayed with his father on the farm when his mother drove away every morning to work at the peanut mill. His father was always busy in the garden he made among the bare trees in the orchard. The old windmill had lost its wheel, but there was an electric pump for water. Cantaloupe and squash vines grew along the edge of the garden, with rows of

tomatoes and beans, and then the corn that grew tall enough to hide the money trees.

His mother fretted that they might cause trouble. Once he heard her call them marijuana. His father quickly hushed her. The word was strange to him but he never asked what it meant because he saw his father didn't like it.

He found the firefly tree one day while his father was chopping weeds and moving the pipes that sprayed water on his money trees. It was still tiny then, not as tall as his knee. The leaves were odd: thin arrowheads of glossy black velvet, striped with silver. A single lovely flower had three wide sky-colored petals and a bright yellow star at the center. He sat on the ground by it, breathing its strange sweetness, till his father came by with the hoe.

"Don't hurt it!" he begged. "Please!"

"That stinking weed?" His father grunted. "Get out of the way."

Something made him reach to catch the hoe.

"Okay." His father grinned and let it stay. "If you care that much."

He called it his tree, and watched it grow. When it wilted in a week with no rain, he found a bucket and carried water from the well. It grew taller than he was, with a dozen of the great blue flowers and then a hundred. The odor of them filled the garden.

Since there was no school, his mother tried to teach him at home. She found a red-backed reader for him, and a workbook with pages for him to fill out while she was away at work. He seldom got the lessons done.

"He's always moaning over that damn weed," his father muttered when she scolded him. "High as a kite on the stink of it."

The odor was strange and strong, but no stink at all. Not to him. He loved it and loved the tree. He carried more water and used the hoe to till the soil around it. Often he stood just looking at the huge blue blooms, wondering what the fruit would be.

One night he dreamed that the tree was swarming with fireflies. They were so real that he got out of bed and slipped out into the dark. The stars blazed brighter here than they had



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ever been in the city. They lit his way to the orchard, and he heard the fireflies before he came to the tree.

Their buzz rose and fell like the sound of the surf the time they went to visit his aunt who lived by the sea. Twinkling brighter than the stars, they filled the branches. One of them came to meet him. It hovered in front of his face and lit on the tip of his trembling finger, smiling at him with eyes as blue and bright as the flowers.

He had never seen a firefly close up. It was as big as a bumblebee. It had tiny hands that gripped his fingernail, and one blue eye squinted a little to study his face. The light came from a round topknot on its head. It flickered like something electric, from red to green, yellow to blue, maybe red again. The flashes were sometimes slower than his breath, sometimes so fast they blurred. He thought the flicker was meant to tell him something, but he had no way to understand.

Barefoot and finally shivering with cold, he stood there till the flickering stopped. The firefly shook its crystal wings and flew away. The stars were fading into the dawn, and the tree was dark and silent when he looked. He was back in bed before he heard his mother rattling dishes in the kitchen, making breakfast.

The next night he dreamed that he was back under the tree, with the firefly perched again on his finger. Its tiny face seemed almost human in the dream, and he understood its twinkling voice. It told him how the tree had grown from a sharp-pointed acorn that came from the stars and planted itself when it struck the ground.

It told him about the firefly planet, far off in the sky. The fireflies belonged to a great republic spread across the stars. Thousands of different peoples lived in peace on thousands of different worlds. The acorn ship had come to invite the people of Earth to join their republic. They were ready to teach the Earth-people how to talk across space and travel to visit the stars. The dream seemed so wonderful that he tried to tell about it at breakfast.

"What did I tell you?" His father turned red and shouted at his mother. "His brain's been addled by the stink of that poison weed. I ought to cut it down and burn it."

"Don't!" He was frightened and screaming. "I love it. I'll die if you kill it."

"I'm afraid he would." His mother made a sad little frown. "Leave the plant where it is, and I'll take him to Dr. Wong."

"Okay." His father finally nodded, and frowned at him sternly. "If you'll promise to do your chores and stay out of the garden."

Trying to keep the promise, he washed the dishes after his mother was gone to work. He made the beds and swept the floors. He tried to do his lessons, though the stories in the reader seemed stupid to him now.

He did stay out of the garden, but the fireflies came again in his dreams. They carried him to see the shining forests on their own wonderful world. They took him to visit the

planets of other peoples, people who that lived under their seas, people who lived high in their skies, people as small as ants, people larger than the elephants he had seen in a circus parade and queerer than the octopus in the side show. He saw ships that could fly faster than light from star to star, and huge machines he never understood, and cities more magical than fairyland.

He said no more about the dreams till the day his mother came home from work to take him to Dr. Wong. The nurse put a thermometer under his tongue and squeezed his arm with a rubber gage and left him to wait with his mother for Dr. Wong. Dr. Wong was a friendly man who listened to his chest and looked at the nurse's chart and asked him about the fireflies.

"They're wonderful!" He thought the doctor would believe him. "You must come at night to see them, sir. They love us. They came to show us the way to the stars."

"Listen to him!" His mother had never been out at night to see the fireflies shining. "That ugly weed has driven him out of his head!"

"An interesting case." The doctor smiled and patted his shoulder in a friendly way and turned to speak to his mother. "One for the books. The boy should see a psychiatrist."

His mother had no money for that.

"I'll just take him home," she said, "and hope he gets better."

A police car was parked in front of the house when they got there. His father sat in the back, behind a metal grill. His head was bent. He wouldn't look up, not even when his mother called through a half-open window.

The police had more cars parked around the garden. They had chopped down all the money trees and thrown them into a pile. The firefly tree lay on top. Its fragrance was lost in a reek of kerosene. The policemen made every body move upwind and set the fire with a hissing blowtorch.

It spread slowly at first, then blazed so high they had to move farther away. Feeling sick at his stomach, he saw the branches of the tree twist and bend against the flames. He heard a long sharp scream. A cat caught in the fire, the policemen said, but he knew it wasn't a cat. Fireflies swarmed out of the thrashing branches and exploded like tiny bombs when the flames caught them.

His father was crying when the police took him away, along with a bundle of the money trees for evidence. His mother moved them back to the city. In school again, he tried to tell his new teachers about the fireflies and how they had come to invite the Earth into their great confederation of stars. The teachers said he had a great imagination and sent him to the school psychologist.

The psychologist called his mother to come for a conference. They wanted him to forget the fireflies and do his lessons and look up his old friends again, but he wanted no friends except the fireflies. He grieved for them and grieved for his father and grieved for all that might have been. □

HOUSE TRAP

Continued from page 69

It never reached orbit around the planet. Billions of disassemblers had converted all the ship's mass into a swarm of their own kind. Then, their job complete, they turned themselves off.

WHEN TABITHA RETURNED TO THE HOUSE around the sun, she was only two. Between the immature body and space legs, she felt embarrassingly wobbly. But when the President of the Sphere bent down in all his dignity to pin the Order of the Galaxy medal on her, the crowd went wild. Tabitha's father had to read her speech for her, because of the tears in her eyes.

Afterward, her father and grandfather took her in the Institute's silver aircar to Mother's house. The mechanical sheep had been replaced by electronic locusts, and there wasn't a blade of grass in sight.

"Stay as long as you like," said her father after carrying her suitcase to the front door. "If anyone in history ever deserved a vacation from a group mind..." He smiled and kissed her on the cheek, then turned back toward the aircar.

She had to jump up to reach the heavy brass knocker, and for all her effort, it made only a muffled clunk.

After a minute, the door swung open. Mother greeted her with a yelp of joy. There was someone else with her: a second head grew from the top of her torso. And she had gone-morphed to a biological sixteen.

"Richard?" said Tabitha. She blinked to be sure.

"We got married," said Mother, smiling at his head beside hers. His mouth twitched from a wire-ecstasy implant in the center of his forehead.

"Do you think like a group mind now?" asked Tabitha.

"Oh, no," said Mother. "No thinking. But being a hermaphrodite has other advantages." She playfully pinched Richard's cheek.

There was a whoop from Tabitha's old room, and the door dilated. Mother and Richard's heads turned in unison.

Four small children rushed through the opening, and a barrage of gravity-neutralizer arrows flew through the air toward Tabitha and Mother.

As the two of them floated toward the ceiling, Mother said, "Aren't they cute? We cloned them so you'd have playmates."

Staring down, Tabitha saw that each child was a two-year old Richard. They began disassembling her suitcase, looking for presents.

"And we fixed up your room so you can move right back in. It's going to be wonderful!"

Her heart pounding, Tabitha looked out the window and saw that the aircar hadn't left yet; there was still time. She took a deep breath and consulted her augment. □



Freedom From Freedom From

by Titus Stauffer

Genetically engineered human and nonhuman beings and Conscious Computers are coming our way. Are we ready? Will we allow them to vote, defend themselves, own property? Or will we simply say that since they're not human, they have no rights? Slavery Part II? We'll face these and many other vexing problems, equipped with two main ideologies. Welfare Statists on the left, coercive busybody moralists on the right. Socialists give us freedom from housing discrimination by punishing us for advertising our houses as having walk-in closets. By doing so, they say, we convey our intent to discriminate against those in wheelchairs! Witchbarners give us freedom from sin by protecting us from "lewd" Calvin Klein ads. Perhaps giving freedom and broad-mindedness could provide some solutions. Instead of sponsoring quarrels between the NAACP, NAACP, NAACP, and so on, we'd be better off with the NAACP (Nonexclusive Association for the Advancement of Conscious Beings). We need Freedom From Freedom From when the freedoms that our leaders foist on us are false ones. If you love real freedom, versus political satire, and science fiction, Freedom was written for you!

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Rock-and-roll will never die—but neither will science fiction.

BELOW SF's *Hugo*—a past SF fan favorite Michael Whelan takes Meat Loaf Back into Hell for the cover of his comeback album. **RIGHT:** *Dra* creator and Heavy Metal artist Richard Corben painted the cover of Meat Loaf's debut album, *But Out of Hell*.

SF ROCKS!

BY LEWIS SHINER



SF: the self-styled "literature of ideas." Rock-and-roll: music of the body, primitive, hormonal. When you look at it that way, it's pretty amazing that SF and rock-and-roll ever got together in the first place.

Despite its claims to the contrary, SF is a highly conservative form of literature. Military SF still rules a major portion of the field; galactic empires and can-do heroes still thrive in the works of Lois Bujold and David Drake. When aliens aren't simply insectlike targets, they tend to be far more human and comprehensible than, say, your average American politician.



This isn't hard too understand when you consider that most of the SF writers I know would be far more likely to curl up on the couch for an Ed Wood Jr. film festival than to hurt themselves into a mosh pit or drop some E and rave all night. Writing is a solitary, inward directed activity, and music is pretty much the exact opposite.

Still, you can't make a very tasty omelet without breaking a few rules (or something like that), and when the two forces of rock and fantasy collide, the results can be explosive.

For me, the explosion started with Michael Moorcock. His Jerry Cornelius novels are full of a rebellious rock-and-roll sensibility, perhaps nowhere more evident than in the climax of *A Cure for Cancer*, where Jerry reconstructs the universe to the sound of Jimi Hendrix's *Are You Experienced*.

Moorcock is one of the few to work both sides of the rock and SF intersection. His collaborations with Blue Oyster Cult include the FM radio staple "Veteran of the Psychic Wars" from *Fire of Unknown Origin*. British rockers Hawkwind devoted the entire *Warrior on the Edge of Time* album to Moorcock's *Eternal Champion*, with Moor-

cock himself listed as coauthor of four songs and credited for vocals on two of them. Even this was not enough; a few of us diehard Moorcock fans actually have a copy of a British import called *The New Worlds Fair*, by Michael Moorcock and the Deep Fix. Here Moorcock not only sings and writes but plays guitar and banjo as well.

I only know of a handful of other writers who have actually been working musicians as well. At the top of the list would have to be John Shirley, who also has the distinction of an album, *Obsession*, to his credit. In the introduction to Shirley's Scream Press short story collection, *Heatseeker*, William Gibson had this to say: "Sometimes, reading Shirley, I can hear the guitars... This is an effect that fiction about rock, to my knowledge, has yet to attain; I think Shirley can hit it because his stories are rock, in some primal way. They well up from the same dark sea of backbeat and adrenal frenzy."

Of course for every John Shirley there's an Allen Steele, with his Deadhead construction workers in space. And let's not forget that



John Denver begged for a ride on the space shuttle. SF and rock music are both broad spectrums, and not all the places they overlap will be "rebel music," to borrow a phrase from the great rocker and visionary Bob Marley.

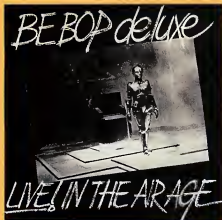
But it is precisely that rebel music that speaks most clearly to me: Pat Cadigan's "Rock On," "Touring" by Gardner Dozois and Jack Dann, Howard Waldrop's "Flying Saucer Rock-and-Roll." Then there are the novels and stories that aren't explicitly about rock-and-roll but still feel like rock: Shirley's *City Come A-Walkin'*, Gibson's "Burning Chrome," Sterling's *Artificial Kid*.

I couldn't hope to provide an exhaustive list of the connections between SF and rock; I've just heard there's a post devoted to the subject on the Internet that runs to some sixty pages. Even given the highly personal limitations I've put on this piece, I've still only talked about SF that's been influenced by music. The other side of the coin, occupied by musicians influenced by SF, is much more highly populated.

If we ignore novelty hits from the '60s, like Sheb Woolley's "Purple

Clockwise from upper left: UFO's Phenomenon reflects an image that would make Fox Mulder's heart glad; Alien designer H. R. Giger painted this unique cutout art for Emerson, Lake and Palmer's *Brain Salad Surgery*; Giger's inner sleeve art from that same album; Boston's Third Stage featured a space ship by John Salazaro; Jefferson Starship's cosmic *Dragonfly*, by artist Peter Lloyd.

People Eater" and "The Flying Saucer" by Buchanan and Goodman, Jimi Hendrix is a good place to start talking about SF-influenced musicians. He toyed frequently with the guise of himself as an alien, as in "Third Stone from the Sun" and "Up from the Sides." In an obscure B-side called "Stars That Play with Laughing Sam's Dice" (or STP with LSD, for you drug-reference watchers), Hendrix gives a stoned tour of the solar system ("On your right you will see Saturn...and if you look to the left you'll see Mars...don't open that door! Don't open that door!"). In *Electric Ladyland*'s epic "1969," the protagonist abandons a war-torn future to live underwater.



Pink Floyd has always shown a science-fictional bent, from early songs such as "Set the Controls for the Heart of the Sun" and "Astronomy Domine," to solo work by Gilmour and Waters, to new albums by the current touring band.

SF fans Grace Slick and Paul Kantner jettisoned the Jefferson Airplane to start the Jefferson Starship, whose first album, *Blows Against the Empire*, advocated interplanetary migration. All too soon, however, the band opted for chart success instead of idealism.

Yes's *Fragile* included a song called "Starship Troopers," after the Heinlein novel; in fact, much of Yes's work, such as *Close to the Edge* and *Tales of Topographic Oceans*, might well prove to be science fictional if anyone could ever understand it.

Fantasy and horror fans also got into the act: the '60s spawned a rock group named after H. P. Lovecraft; the Turtles, a k a Flo and Eddie, actually performed at a World Fantasy Convention in Providence in 1985; Concrete Blonde's brilliant *Bloodletting* album was inspired by the work of Anne Rice.

Here in the '90s, techno band Mona Lisa Overdrive took their name from the novel by William Gibson; Donald Fagin, who had played with SF themes in Steely Dan songs such as "King of the World," came out with an SF concept album called *Kamokirind*, a tour of the future in a car which is almost a city unto itself.

All of these artists, and many more, were influenced by science fiction and fantasy prose. They are a small minority next to the rockers who have been influenced by SF film. The Ringo Starr album cover parodying *The Day The Earth Stood Still*, the B-movie influences in such songs as "Planet Claire" by the B-52s, David Bowie's "Space Oddity" all come to mind.

With the advent of the video age, SF images have proliferated: from Tom Petty's postapocalyptic "You Got Lucky" to Michael Jackson's "Thriller," from Matthew Sweet's Japanimation for "Girlfriend" to





*Clockwise from above: One of SF film's oldest images from Metropolis appears on Be-Bop Deluxe's *Live! in the Air Age*; Roger Dean's otherworldly structures provided the cover for Asia's *Pyramid*; popular UK artist Les Edwards shows an unsettling image of the future on Legs Diamond's *The Wish*; Roger Dean supplied the alien landscape for Anderson, Bruford, Wakeman, and Howe, an album by former members of the band Yes.*

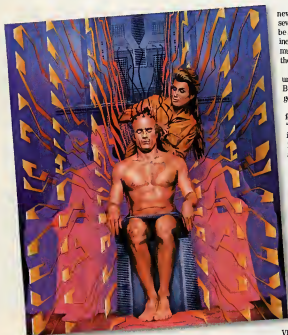
Ahrod 'n Roses' T2 outtake, "You Should be Mine." Attempts at full-length SF musicals—with the exception of the ever-popular *Rocky Horror Picture Show*—have been less successful. Take, for example, *Streets of Fire*, with music by Meat Loaf writer/producer Jim Steinman... please.

If much of the explicit imagery that rock and SF borrow from each other is superficial, maybe it goes back to what I said at the beginning about SF as a literature of ideas, and rock as a music of the body. Maybe the real lesson here is that genres profit less from stealing from each other than they do when they listen and learn from each other. When SF gains the energy and drive and innovation that the best of rock has, and when rock is played with heart and thought and imagination, then we truly have the best of both universes. □

GAMES

By Jeremy Bloom

SF gamers are getting ready for an exciting new dimension.



ABOVE: We're not quite there yet, but the newest generation of games is the closest we've come to plugging directly into our computers. Art by Barclay Shaw. INSET: NuVision's 3-D Spex promise to put you in the action.

WHERE WOULD SCIENCE FICTION BE WITHOUT gadgets? In fact, science fiction is really a misnomer—it's the application of science that gives us the gee-whiz stuff. Perhaps it should be called "tech-fic," in honor of the gadgets, and the tools. The Consumer Electronics Show in Las Vegas is an annual silicon orgy dedicated to all of the above. And it's the must-be place for every company, from around the world, that is taking a chunk of new, cutting-edge technology and shepherding it across the barrier that divides last year's science fiction from next year's mail-rat gotta-have product.

All the big boys are there: Phillips, showing off their new picture-phones (the Internet phone seems to have finally lit a fire under the telecom folks; looks like this will be the year that video-telephony finally hits); all the video companies showing off the hot

new DVD systems (a new CD/video disk standard that fits seven times as much info onto a standard-sized CD; they'll be available for PCs late this year, and you can just imagine what that's going to do for gaming: Seven times the music! Seven times the graphics! Seven times the detail, the levels, the cinematography...)

Just a few years ago, games were a big part of the CES until they became too big, and got a show of their own. But there are still some things for the die-hard gamer to get excited about here.

In a corner of one of the huge convention halls the folks from NuVision demo'd their 3-D SPEX (Slogane: "Wicked 3-D realism like nothing you've ever been into."). If your only experience of 3-D is those obnoxious red/blue cellophane-and-paper glasses that allowed "The Creature from the Black Lagoon" and "It Came from Outer Space" to make your parents nauseous, then it's time to get with the program, amigo. Today's 3-D is nothing like mom and dad's.

A quick physiological digression—how we see: We are blessed with what is called binocular vision (meaning "two eyes"). Our brain takes the two slightly different world-views that we get from our two separate eyes and combines them into one picture. But the closer an object is to your eyes, the greater the differences between the two images. Our brain uses those differences ("parallax") to tell what is closer and what is further away. That's why, no matter how well-rendered an image on a screen is, your eyes will never see it as anything more than a 2-D picture, because both eyes see the same image, and the same background. But if you could somehow show a separate image to each eye ... you would have 3-D the natural way.

VR headsets (like the \$500 I-Glasses from Virtual I/O) work that way: Each eye has its own screen. Very cool; but two mini-TVs cost big bucks, not to mention the weight. Enter liquid crystal technology. Take a simple, lightweight pair of glasses, and make the lenses out of liquid crystal (LCDs). Sit down in front of your PC, and plug in a slightly modified game—in this case Interplay's *Descent II*. Instead of sending one picture to your computer's monitor, the modified game sends a pair—one for your left eye, one for your right. Not at the same time, of course; it alternates. A signal tells those LCDs to go alternately dark and clear—left, right, left, right. Too fast for you to see (unless you have an older, slower system). Your monitor should run at 90Hz or better, or you get a little flicker).

And your brain sees 3-D. It really works, by God! The enemy ships seem to float in the air in front of you; corridors really stretch into the distance; and bullets and missiles fly down them! Well ... they do if you have a fast enough machine. These units are com-



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ing out now because of the power involved; they need the fast CPUs and graphics cards that have come out in the past couple of years. You can run on a 486, and it is still very cool,



it's just kind of slow. But they recommend a P-100, and one of the new "3-D" accelerator video cards (particularly the Canopus True3D).

As for your 3-D shades, there are three major systems available: The 3-D SFX (800 or less), and their competitors — Simuleys (from Stereographics, \$170 or less) and VRsurfer (above, from VRex, \$90 or less). All work on the same principals, although VRex is wireless (using an infrared signal instead of a cable) and 3-D SFX use a patented pi-cell LCD sys-



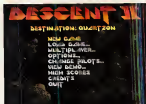
tem for a faster refresh rate (faster=better). All run the same games, too — the game developers have patches available to allow the glasses to be used with *Descent II*, *Whiplash*, *Wolfenstein 3D*, *Slipstream 5000*, and others are in development.

One problem with surfing on the cutting edge: that which is new and cool is not always that which is well thought out and/or fully developed. A good example is the very cool, but not-quite-there-yet *MindDrive* (from The Other 90% Technologies Inc, \$149). The premise here: Control your PC directly using



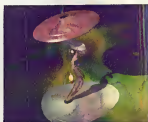
thought waves! Is that cool, or what? Alas, in the execution, it's still just lukewarm. Insert your finger in the controller, and it reads your left-brain/right-brainwave patterns.

"Different mental activities — remembering, relaxing, analyzing, positive and negative thoughts, left and right brain functions — all generate different bio-electrical patterns," says the manual. But the actual execution is a little vague. Everyone who told me "It takes practice, but you can make it work," was selling the system. Of the several testers who tried it for us, none could get any sense of control out of the various software packages. *Mindshaker* (control your descent down a ski-run by thinking "left" and "right"), *MindFight*, *MindDoodle* (a drawing program). Once you do get a semblance of control, you're left with a game that is at about 1985's level of complexity.



Good effort, but save your money till they get it right.

And on the truly "gee-whiz" frontier: IBM was showing off a concept that is still several years from reality: the Personal Area Network (PAN). The human skin can conduct an electrical signal. Just a very tiny voltage — not enough to shock you, but enough to convey data. With a sender/receiver unit in your pocket, you can shake hands and automatically exchange business cards ... touch the telephone and it reads your credit card num-



ber ... touch your PC and download all the business cards you picked up at the convention ...

I'm sure you're already getting ideas yourself. — "It may look like a group hug at the beginning of the meeting, but actually they were all just exchanging notes..." One thing they're working on *real hard* is security, so you don't have a guy bumping into you at the airport and getting all your credit card info.

But imagine the gaming possibilities! Multi-player games, and when you touch the joystick the computer reads the module in your pocket and knows who is playing ... touchpads tattooed on your skin ... the mind boggles.

Technology. You gotta love it. □

YOUR EYES

Continued from page 65

between the thick grey stems of two fever trees sitting at the edge of the dust pits. "Here!"

"The Elders? That's great!"
Ethan York moved toward her.
"Just a bit further," she said. "Clear these trees."

The human took one step, and another. The Elders expected him to sink into the pits, drown in the dust, die. Tali shook in revulsion at the image. End Ethan York? No. He was hers.

She called out to him, heedless of those others who listened and watched nearby. "Ethan York, wait! Don't go any further!"

— Tali! Have you gone mad?
She ignored the Elders' mindspoken warning. "It's a trap, Ethan York. Go back!"
The human turned in alarm. "Tali? What's wrong?"

"It's too dangerous that way." She had to turn him from the path, send him back to his bead vessel, send him away.

— Tali, you will be ending.
She ignored the Elders' warning. "Hurry," she called to the human. "Oh, please, hurry!"

The heavy golden fragrance of ripe blossoms permeated the air.

"Go back to your vessel," she said. "Now."
"Don't be foolish." He put out a hand. "Tali, please!"

Tali, in the guise he desired, reached out to him and he grasped her hand. Without a word they ran for the silver bead ship, his vessel.

She felt his need. Felt, too, her own. "Tali, tell me that you'll come back with me!"

"Yes."
"Oh, Tali, I love you!"
Love! He spoke to her of love!
His arms went around her and she responded instantly. Loving him.

It didn't take long. Soon his essence mingled with hers. She dropped his empty carcass. It no longer concerned her. All that was Ethan York, the core and content of his being, resided in her now. It had been a good loving.

The rocks and stones were shimmering and shifting as the Elders resumed their true forms, green crests held high, beaks snapping in satisfaction.

— The nest is preserved. You're forgiven. Leave off this disguise, rejoice us.

— There'll be other strangers. They'll look for him.

— Then we will deal with them as well.

— But...
— This is no longer your concern, Tali. You've done well and we've decided to reward you. Your mating will be advanced. It will take place this very evening.

Dolmin stood among the Elders and his eyes glowed with a light that reminded Tali of hungry nightfeeders.

— Come back with us to the nest, daughter. Come to your mating, and to the Festival.
— In a moment. I'd like to inhale the scent of the fever trees and gather my thoughts.
— Very well. We await you at the cave. They were gone. She was alone with the Ethan York's husk.

SHE THOUGHT OF ALL THAT THE HUMAN had taught her, of all that he had shown her. Of his silver bead ship that held his small silver egg with all of her words in it. Even now she could see him moving his odd but pleasing hands over the shining skin of his vessel, talking to it, listening to its responses.

And she knew, suddenly, what she must do. Assuming her own shape, she hurried to the clearing where the silver vessel waited. Its surface gleamed.

The human had moved his hands just so, and pressed here. She made two hands and did as he had done.

A dark space opened in the skin of the vessel. Tali peered in. Flickering lights swirled inside like miniature suns.

The bead's name, what had he called it? Yes, she remembered. She formed a human mouth and sang the alien speech: "Computer?"

The flat metallic voice answered. "Working."
"Can you return this vessel to the place from which it came?"

"Affirmative. A course is laid-in for return." It would be simple to send this bead back upon its journey. Yes, let Ethan York's words be returned to his people. His essence would remain here with her.

But an empty ship, wouldn't that arouse suspicion? Bring other strangers here? Endanger the nest?

— The nest must be protected.

Tali made a swift decision. She stared at her reflection in the mirrored wall and saw a fine-looking specimen there: a male human with dark hair and straight white teeth. The insignia on his silvery outer skin read: E. York, L. Cmdr.

Hadn't he asked her to go back to his nest with him? Yes, she would please him. She would go there, and perhaps to Xenobla City, and to all those other strange names, too.

"Awaiting your command," said the computer.

She entered the bead. "Let us go."
"Engaging. Prepare for lift-off."

The door closed. The snug bed in the curve of the wall gave off a pink glow. Tali crawled into it and a strange, soft webbing enclosed her. A roaring sound began to fill the trembling bead in which she lay. Tali grew heavy, so heavy that she couldn't raise her head from the soft orange cushion. And part of the bead's wall had become transparent.

She gazed out through it into the purple bowl of the sky where the lights were beginning to grow larger. On one of those lights lived Ethan York's people.

She would love them all very much. □

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BOOKS

Continued from page 19

have no reason to suspect the solar system they land in to be home to aliens, but they follow all the rules; cloak as soon as possible after warp is complete, send robot probes, scan for communication.

They don't detect the cloaked aliens who are watching them, and they certainly don't expect to discover four habitable planets and more orbital and other activity than even Terra has. And the last thing they expect is for the aliens to immediately start shooting. The survey ships manage to fight their way back through the warp point, and the aliens follow them. The aliens don't stop until innocent planet Golan-A needs evacuating. And then Erebor, a planet around yet another star, is threatened and attacked. This time communications last long enough for us to finally get a glimpse of the enemy: huge, eight-limbed, hairy monsters that eat people, which are nicknamed Bugs.

The humans, though faster and better equipped, have neither the personnel or the equipment ready. For the most part the last sixty years or so have been peaceful. Though the Federation has factions — the needs of the heart worlds differ greatly from the fringe worlds, and the corporations have a yet

another voice — generally people live their lives — long ones thanks to antigravity technology — pretty much as they choose. Pretty much the way we live our lives.

Weber and White have a huge cast. Rear Admiral Vanessa Murakuma is red-haired and petite but full of strategic cunning. Her fighting determination and her feeling of responsibility for the defenseless civilians tears her up with guilt that nearly breaks her spirit as the war itself nearly breaks her physically. Her right-hand man, and old flame, Marcus LeBlanc, is my favorite character. He's an intelligence officer and a writer of a science fictional novel. He'll bring the same creative thinking that went into writing a novel about the horrors of humans transmogrified by cybernetics into fighting a war with an unknown enemy.

Hannah Avram is Sky Marshal, while the brilliant and highly respected former Sky Marshal Ivan Antonov is brought out of retirement to be on the allied war council, along with First Fang Kihara of the Orion, and other alien representatives. Though humans hold the technological edge, each ally has a unique strength and each ally



understands the threat the Bugs hold to them. The / are eager to fight.

Fang Zhaunak, Raymond Prescott, Ellen MacGregor... the list of characters goes on. The war sweeps through many star systems, and as old warriors go down fighting, new ones swing up to fill their place. Weber and White have created a huge canvas. They have clearly spent a lot of time planning the battles and imagining fleets. What type of

ships would a Space Navy have? How would they be manned? What types of weapons and communications? There are superdreadnoughts, battle cruisers, and pinnaces and many others in a range of classes. The Federation quickly labels the Bug ships too, from Cataphracts, to Archers, to Avalanches, and so on. Likewise, the weapons systems are well-thought-out, everything from SBOMAWES to AMBAMS. Frankly it was a relief when a plain old missile was launched.

Weber and White treat the usual aspects of a startling universe with great care. They explain the ability to travel star to star — the warp points — and the communications. They even toss in an explanation for why this isn't a more "cybernetic" world. They really do a tremendous job of setting up a science fiction universe that isn't science fantasy. Well, OK, one of the alien allies does have a form of telepathy. But generally, this is serious, military science fiction.

This novel, though over 600 pages long, ends with only a pause in the battle. I fully expect the authors to have another volume where we learn more about the Bugs and the battles.

Rachel Russell

BOOKS TO WATCH FOR

Starship Troopers, by Robert A. Heinlein (Ace). To many, this is the best novel by the Dean of modern science fiction. This is perhaps the perfect time to reread it or pick it up for the first time — you'll want to be prepared for Paul Verhoeven's film adaptation, due out at Thanksgiving.

Arthur C. Clarke's A Critical Companion, by Robin Anne Reid (Greenwood Press). This is the year 2001's creator turns eighty (and celebrates it with *3001* — see our lead book review). Discover a life that changed the face of science fiction — and the face of the planet as well.

Evenings with Demons: Stories from Thirty Years, by Whitley Streiber (Borderlands Press). In *Communication and Transformation*, he told you that aliens were real. Now, dip into the cream of the crop of short fiction from one writer's fascinating and controversial career.

Return of the Dinosaurs, edited by Mike Resnick and Martin H. Greenberg (DAW). Maureen F. McHugh, Esther Friesner, Gene Wolfe, David Gerrold, and others tell us what really killed the dinosaurs in this entertaining collection.



Leonard Nimoy's Primorials, by Steve Perry (Warner Aspect). Mr. Spock's alter ego created a cosmic SF concept for Big Entertainment's comic book line. Too large an idea to be contained in a comic, it's burst forth to a novel, telling the tale of Earth's original inhabitants, who are now

heading home.

The Best of Interzone, edited by David Pringle (St. Martin's). This Hugo winning UK magazine presents the cream of its crop, including stories by Stephen Baxter, Paul Di Filippo, Brian Aldiss, Thomas M. Disch and many others.

Edgeworks III, by Harlan Ellison (White Wolf). The 20 volume series of the collected works of this award-winning master continue with the compilation of *The Harlan Ellison Hornbook* and *Harlan Ellison's Movie*, previously available only as a limited edition.

Bug Park, by James P. Hogan (Baen). This author of the well-received novel *The Proteus Operation* brings forth his latest Hard SF thriller, tackling miniaturized robotics and nanotechnology, with a touch of industrial espionage as well.



RECENT AND RECOMMENDED

Some stories vanish as soon as one has finished reading them; others live on forever. Tales such as Harlan Ellison's "Repent Harlequin!" said the Tetchoclockman" and Frederik Pohl's "Day Million" form the peaks of the field; they are the Everests towards which all other writers must aspire. Three decades ago, Michael Moorcock wrote one such tale, a revolutionary story of time travel and religion that won the 1967 Nebula Award for Best Novella. Now, Moorcock's story has been handsomely reprinted as *Behold the Man: the Thirtieth Anniversary Edition* (Mojo Press, 140 pages, hardcover, \$12.95). Karl Glogner's jaunt through the ages in search of the historical Christ yields a sense of wonder as dangerous as that which earned Salman Rushdie a *fetna*. Those who only know *Behold the Man* in its subsequent novel incarnation should still hunt this volume out, for they will find the original version the better one, as is true with most such cases of expansion. Illustrated by John Picacio, with an introduction by Jonathan Carroll. Check out <http://www.eden.com/comics/mojo.html> for more info. □

Continued from page 35

found at our South Pole — such as a platinum mine — things would have been different.

LANDIS: Argentina, I believe, claims parts of Antarctica — but everybody ignores them. **SF AGE:** So you don't think any of that will carry over?

ANDREWS: Why should it? Anybody with a ticket can get to Antarctica. The Moon, when occupied by a nation or a corporation that utilizes its resources, will de facto become the property of that group. My take was on the Lunar Prospector — if we locate the ice within kilometers, keep the info to ourselves, as long as we can. The crater is twice the size of Puerto Rico, so that's not too close a coordinate for the site.

SF AGE: So has this discovery interested anyone in sending people back there?

LANDIS: The south pole of the moon would be a very odd place to walk around, if you were an astronaut. The sun never gets more than one-and-a-half degrees above the horizon. And, of course, in the cold trap, it's permanently dark. But even over the rest of the surface, the low sun angle means that most of the surface will be in shadow — astronauts would never be able to see their feet! My suggestion is that astronauts will carry huge mirrors on poles, to reflect light downwards so that they can see where they're walking!

ANDREWS: Geoff — love it! Sounds Gensbachian. That's a perfect spot for a generating plant, isn't it, Geoff? Pump sunlight down from a peak via mirrors or through electric lines, melt what you want and use it.

SF AGE: So you really think that whoever has the biggest gun has a moral right to the Moon, Arlan?

ANDREWS: Not the biggest gun, just the first one. Let me bring up another point. First there should be a totally scientific evaluation of that ice. It might carry ancient secrets — other debris, bacteria, etc. — that should be studied before it is all destroyed.

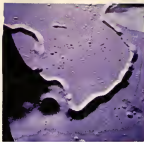
LANDIS: Probably not. No more than frost in your backyard would carry debris from the ocean that the water evaporated from. However, isotope ratios might tell us something about the nature and age of the comets that brought the water to the Moon.

ANDREWS: If it was condensate, it would be pure, but who can say what kinds of stuff might be imbedded, should it be from a direct impact?

LANDIS: The impacts didn't necessarily happen anywhere nearby where the ice is.

ANDREWS: Anyway — scientific evaluation first, then industrial exploitation. It is interesting that Japan has announced that Nissan Motor corporation, among others, is interested in sponsoring a manned return to the Moon in the early 21st Century.

LANDIS: Ice is rocket fuel ore. And in space, rocket fuel is everything. Nevertheless,



ABOVE: Since we think there's ice on the Moon, it's time for us to return to prove it.

some of the moon-colony advocates, such as Peter Kold, advocate not using the ice for rocket fuel.

ANDREWS: Why is that, Geoff?

LANDIS: It's a question of how much there is. All that the Clementine mission admits to finding is the equivalent of two foot-ball fields worth, 25 feet deep. Now, that's 200,000 tons of ice! But if you burn it as rocket fuel, it's gone. Kold says, hey, we should hang on to this ice, and use it to run a lunar colony. You can drink it, breathe it, grow plants with it. And when you recycle it, it lasts.

ANDREWS: Geoff, but if we find more among the other regions of that Puerto Rico-sized crater, that argument might be invalidated.

LANDIS: Right, Arlan. Something that Stuart Nozette pointed out to me last month is that since the radar receiver is on the Earth, you don't actually get radar returns from the deepest parts of the craters. Most of the ice may not even have been seen, only the ice in comparatively shallow craters. So it might not be necessary to conserve.

ANDREWS: All in all, lunar ice means that it will be cheaper to establish manned lunar colonies, at least the first ones. Ice is just the first of many surprises that the Moon has for us, I am confident.

LANDIS: Well, I don't agree with Kold. I think that if we can use lunar ice to get us out into the rest of the solar system, that's a fitting use for it. There's ice on Mars, on the moons of Mars, in asteroids, even on the poles of Mercury. Once we get established, we have all the rocket fuel we can use.

ANDREWS: I agree with Geoff — once we're out there, we can grab other ice; don't limit our thinking up front. The Moon is a very convenient place that has enabled us to practice space travel before venturing into serious space. It is also fortunate in that it may provide us with many of the elements we need for further exploration. One might want to ask: Is this providential or Providential?

LANDIS: The great race at the beginning of the 20th century was the race to the south pole of the Earth. How fitting if the great race of the 21st is to the south pole of the moon!

ANDREWS: The Cold Rush is on! □

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<http://www.clicket.com/clicket/somask/somask.html> Clicket sells media memorabilia: badges, toys, artwork, costumes and masks. Oy, such masks. Paramount has licensed a line of "Deluxe" Star Trek latex masks (you can even get one for that alien thing that looks like an albino gorilla with a horn in the middle of its forehead) that are so egregiously ugly that they come all the way around to beautiful. Picture William Shatner with even more chains



than he has in real life, rendered in pink-crayon flesh tones. The effect is heightened by the delicious baby-spit green that the site's authors have chosen for the background. Don't miss the ID4 "Oversized Exoskeleton Mask."

<http://www.cis.ohio-state.edu/hypertext/faq/usenet/music/ci-fi-refs/faq.html> There are about ten zillion songs that make science-fiction references, and they're all here, organized by artist. Did you know that the Jazz Butcher wrote a song about Harlan Ellison?

<http://204.97.92.34-brickman/sfprogs.html> Ambit Science Fiction TV provides listings of cable and broadcast SF television for the next ten days, including VCR+ codes. The site is updated weekly.

http://www.wsu.edu/s080/-brians/science_fiction/warofworlds.html Remember how your English teacher would use mountains of "insightful" questions as an altar on which to sacrifice any pleasure you took in whatever book you were studying? Well, if you're feeling nostalgic, crack a copy of the Study Guide for H.G. Wells' *War of the Worlds*, fire up your browser, and prepare to be numbed!

<http://www.geocities.com/CapeCanaveral/9813/OK>, so Mulder and Scully are investigating a death — the CEO of an electronics company has been electrocuted by



a computer-gone-berseker (Episode 1x05). Wanna know if it's plausible? Wanna know exactly how much electricity it takes to kill someone? This site will tell you — it annotates the science in every episode of *The X-Files*.

<http://pages.map.com/~amysheer/renehoeck.html> With Star Wars back in the theaters, Star Wars scans are back on the street. This page, part of the Star Wars Collectibles Site, is an account of a ripoff artist who advertised rare, collectible Star Wars toys on the Usenet, and the poor people who spent hundreds of dollars for what turned out to be the new, cheapie figures on display at the local Wal-Mart. A cautionary tale for this age, to be sure.

<http://www.panix.com/~goksef/defs.html> and "What's in a name?" A funny, strange and thought-provoking collection of definitions of the term "Science Fiction," from writers, fans, and pundits.



<http://www.en.com/users/roach/teambigwheel.html> This beautiful, nostalgic site is a graphic tour through the toy-fetishes of designer Brian Roach. Childhood and lovely, it perfectly captures the thrill of tearing the shrinkwrap off a sexy new Steve Austin doll and sniffing the chemical, new-toy-smell that his injection-molded body exuded.

<http://www.pythonline.com/> Monty Python's Web site is wild, chock full of downloadable: animation, video, music, text. Lots of surprises for the casual browser, too. "Spam, spam, spam, spam, spam." Cory Doctorow



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